Data Summary Report

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Hudson River Project
River Monitoring Test

General Electric Company
Corporate Environmental Programs
Albany, New York

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O'BRIEN & GERE
ENGINEERS, INC.

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1. Introduction

On behalf of the General Electric Company (General Electric), O'Brien & Gere Engineers, Inc. (O'Brien & Gere) conducted field studies in the Hudson River to assess the performance of current water column monitoring conducted under the *Post-Construction Remnant Deposit Monitoring Program* (PCRDMP). A second objective of this *River Monitoring Test* was to develop a more thorough understanding of the origin, fate, and transport of PCBs in the upper Hudson River. The remainder of this report presents the program objectives, sampling and analysis methods, and hydrologic and analytical data. In addition, PCB mass transport estimates based on the PCB and hydrologic data are presented.

1.1. Background

Water column sampling and high resolution capillary column PCB analysis have been conducted on the upper Hudson River between Hudson Falls and Thompson Island Dam (Figure 1) weekly or biweekly since April 1991 (O'Brien & Gere 1993a, 1993b, 1994a, 1995a). In 1991 and again in 1992, PCB levels were observed to increase in the river upstream of the Thompson Island Pool sediments (Figures 2 and 3). The principal source(s) of these loadings was discovered in the vicinity of Bakers Falls in Hudson Falls, New York (the Bakers Falls source(s); O'Brien & Gere 1994b). Interim remedial measures were implemented in 1993, 1994, and 1995 to control this source(s) (O'Brien & Gere 1994b). Water column data collected before, during, and after the 1991 PCB loading event provided new insights into the origin, fate, and transport of PCBs in the upper Hudson River (O'Brien & Gere 1994a).

Implementation of the interim remedial measures significantly reduced water column PCB concentrations, however, low concentrations (<50 ng/l) have persisted in the water column (O'Brien & Gere 1994a). A number of potential sources of these PCBs have been identified, but routine monitoring programs were designed to monitor the effectiveness of the containment of capped sediments along the river banks (remnant deposits), not to isolate other potential sources.

The *River Monitoring Test* was a research program to evaluate the current monitoring program's ability to quantify PCB flux to the Hudson River from the capped remnant deposits (O'Brien & Gere 1995b). Additionally, the results of the program will be used to quantify the relative magnitude of other potential sources of PCBs to the river.

1.2. Potential sources of PCBs

Six sources of PCBs have been identified as having the potential to contribute to the low levels of PCBs currently found in the water column of the upper Hudson River (Figure 1):

Sediments Upstream of Hudson Falls. PCBs are intermittently detected at the background sampling station located at Hudson River Mile 197.0 (HRM 197.0[1]; O'Brien & Gere 1993a, 1993b, 1994a). Sediments containing PCBs have been identified in Queensbury approximately 10 miles upstream of this sampling station (Engineering-Science 1994; O'Brien & Gere 1995c). These sediments may be the source of PCBs at the background station.

Hudson Falls plant site and vicinity. On-going investigations at the Hudson Falls plant site and vicinity (HRM 196.9) indicate that this area likely continues to contribute PCBs to the river (O'Brien & Gere 1995d). This source was partially characterized and remediated in 1993, 1994, and 1995 (O'Brien & Gere 1994b). Subsequent investigations have found dense non-aqueous phase liquid (DNAPL) in bedrock fractures beneath the site (Dames & Moore 1994). This DNAPL source may contribute to PCB concentrations that persist in the water column downstream of the source area (O'Brien & Gere 1994a).

Fort Edward former outfall 004 area. Soil and sediments in the vicinity of the General Electric Fort Edward facility former outfall 004 located at approximate HRM 196.1 are currently being investigated (O'Brien & Gere 1994c). PCBs have been detected in soils and sediments along the river shore adjacent to and downstream of the former outfall.

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[1]The north-south orientation of the river provides a convenient location reference. Hudson River Mile 0.0 (HRM 0.0) is located at the Battery in New York City and river mile increases traveling north up the river.

Remnant deposits. Removal of the Fort Edward dam in 1973 by Niagara Mohawk dropped water levels in the pool upstream of the of the former dam and left an estimated 1.5 million cubic yards of PCB containing remnant deposits along the banks of the river between HRM 196.4 and HRM 194.7. In-place containment of the remnant deposits was performed by General Electric in the fall of 1990 (JL Engineering 1992) in accordance with the 1984 U.S. Environmental Protection Agency's (USEPA) Record of Decision for the site.

River monitoring is performed pursuant to a Consent Decree (90-CU-975) between General Electric and the United States. The current monitoring program, the PCRDMP, was initiated in 1992 following completion of the in-place containment measures (O'Brien & Gere 1992a, 1993b, 1994a). The PCRDMP has identified increases in water column PCB concentrations through the remnant deposit region of the river (O'Brien & Gere 1994a). As discussed in Subsection 1.3, this increase may be due to the influences of other sources in the region or sampling anomalies.

Thompson Island Pool sediments. As the first pooled area downstream of Hudson Falls and Fort Edward, Thompson Island Pool is a sink for sediment particles and, potentially, for PCBs originating from sources upstream. Water column data collected at Thompson Island Dam (O'Brien & Gere 1993a; General Electric Company 1993, 1994, 1995) indicate that water column concentrations increase through Thompson Island Pool. Additionally, the PCB composition shifts from one that resembles Aroclor 1242 at the Fort Edward sampling station to one that is altered by the enrichment of mono- and di-chlorobiphenyls. The increase in PCB concentrations through the Thompson Island Pool may be attributable, at least in part, to sources upstream or sampling anomalies, as discussed in Subsections 1.3 and 1.4.

Thompson Island Pool dredge spoil sites. For navigational purposes, the New York State Department of Transportation (NYSDOT) periodically dredged the river in Thompson Island Pool during the 1950s through the 1970s (Malcolm Pirnie 1980). As a result, several NYSDOT dredge spoil sites containing sediments with PCBs are located adjacent to the Hudson River in Thompson Island Pool. In addition the Fort Miller dredge spoil site is located adjacent to the Moses Kill (HRM 191.5), a tributary to the Hudson River. Ground water discharge through these dredge spoils sites may be contributing PCBs to the river.

1.3. PCB dynamics

Water column PCB monitoring over the past several years has identified several PCB fate and transport phenomena:

Consistent increases in PCB concentrations have been observed between HRM 196.8 and HRM 194.2 (reach 9). Since initiation of the PCRDMP in 1992, PCB concentrations downstream of the remnant deposits (HRM 194.2) have been approximately two times higher than the concentrations upstream (HRM 196.8); O'Brien & Gere 1993b, 1994a). In 1994, geometric means for these two stations were 31 and 17 ng/l, respectively (O'Brien & Gere 1995a). This simple evaluation of the monitoring data could be interpreted a an indication that the remnant deposits are a significant source of PCBs to the Hudson River. However, as discussed below, a review of the complete data set does not support such an interpretation.

Little or no changes in PCB composition occur as water flows through reach 9. PCBs in the water column at the upstream and downstream stations in reach 9 have nearly identical composition that is similar to that of Aroclor 1242 (O'Brien & Gere 1993b, 1994a). PCB composition data from the remnant deposit sediments are different from water column data in that the PCBs have been dechlorinated, although composition data are limited. If the remnant deposits were responsible for the observed concentration increase, then a noticeable shift in PCB composition would be expected to occur as the river passed by the remnant deposits. This shift does not occur (O'Brien & Gere 1995a).

Upstream and downstream loadings in reach 9 appear correlated. The apparent PCB mass loading to the river between HRM 196.8 and HRM 194.2 (e.g., the remnant deposits including outfall 004 area) varies as the mass loading from upstream of the monitoring point HRM 196.8 varies (between HRM 197.0 and 196.8). Generally, as upstream source loading increases, the apparent loading from the remnant deposits increases (O'Brien & Gere 1994a, 1995a).

Given the current understanding of PCB loading from the upstream sources, it is not clear physically why increases in PCB inputs in the area of the remnant deposits would occur at the same time increases at the upstream sources occur. These sources would be expected to behave independently. Instead, the observed dependent loading suggests that source(s) upstream of the remnant deposits are responsible for PCB loading observed at both locations. The increase between HRM 196.8 and HRM 194.2 likely reflects

underestimation of the mass loading at HRM 196.8 rather than loading originating from the remnant deposits. Such underestimation may be caused by incomplete mixing of the PCBs over the river cross-section and manner of sampling (O'Brien & Gere 1995a).

Anomalous loading from Thompson Island Pool. Summer low flow PCB loadings from the Thompson Island Pool increased following the upstream loading events of 1991 and 1992. The summer low flow loadings from Thompson Island Pool decreased in 1994 following control of the Bakers Falls source(s) (O'Brien & Gere 1993a; General Electric Company 1993, 1994, 1995). However, Thompson Island Pool PCB loadings remain elevated compared to those observed prior to the upstream loading events (O'Brien & Gere 1993a). The PCB loadings measured in Thompson Island Pool are "anomalous" in that they exceed the loading from the old sediments and the source of the additional load is not known (HydroQual 1995). These observations suggest a causal link between the elevated Thompson Island Pool loads and upstream loading; in particular, the PCB loading originating near the Bakers Falls in 1991 and 1992.

The anomalous loading may be derived from DNAPL originating from the Hudson Falls plant site area if DNAPL is transported to the Thompson Island Pool as part of the bed load, and not detected by the monitoring program. Alternatively, a large load of PCB contaminated sediment from the Bakers Falls source(s) may have entered the Thompson Island Pool in September 1991 resulting in an increase in the surface sediment PCB concentration (HydroQual 1995). "Fresh" deposits of PCBs would provide a source to the water column, thereby producing the observations at Thompson Island Dam. To the extent that these new PCB inputs into Thompson Island Pool are not accounted for the amount of PCBs estimated to originate from the old buried sediments will be overestimated by the current monitoring program.

1.4. Potential limitations of current monitoring program

The existing monitoring program is limited in its ability to assess PCB flux to the river from the potential PCB sources for a number of reasons:

- monitoring stations may not isolate all potential PCB sources
- potential movement of PCB in oil in the river below sampling depths
- collection of samples from the shoreline where PCB levels may vary in concentration, due to incomplete mixing, across the river channel.

The sampling design includes quantification of water column PCB concentrations both upstream and downstream of the remnant deposits (see section 1.1). It does not include enough sampling stations (i.e., a monitoring station upstream and downstream of each potential source) to differentiate the potential impact of other source(s) that may be present. At best it only allows the magnitudes of the following source areas to be delineated:

- Sources upstream of the Hudson Falls site
- Hudson Falls site
- Former Fort Edward outfall 004 area
- Thompson Island Pool sediment (old and recently deposited) and DOT dredge spoil sites.

Another potential limitation of the existing monitoring program is that PCB oil may be moving in the river below sampling depths. Based on current understanding of PCB sources near the Hudson Falls plant site, PCBs entering the river from this source area are, at least in part, in the form of DNAPL. Since the specific gravity of the DNAPL (sg approx. 1.38) is greater than water, it may settle in water and be incorporated as part of the bed load. Dissolution of the DNAPL as it moves downstream may contribute to the observed increases in PCBs through the remnant deposits region of the river.

A third potential limitation of the monitoring program is that sampling methods differ among the stations depending on accessibility. Grab samples are collected at stations located along the shoreline whereas depth integrated composites from the center channel are collected at other stations. Shore sample PCB levels may be biased (high or low) due to variable concentrations across the river channel (i.e., not "representative" of the average concentration) (O'Brien & Gere 1995a).

Of particular concern is the sampling station referred to as the Canoe Carry (HRM 196.8) located at the west shore of the river between the background station and the upstream portion of the remnant deposits. That station was established to monitor the activity of potential source(s) in the vicinity of Bakers Falls. Due to the proximity of this sampling station to the Bakers Falls source(s) (HRM 196.9), incomplete lateral mixing of PCBs originating upstream of HRM 196.8 could produce biases in PCB concentrations observed at this location. This sampling limitation could produce the false observation of increased PCB concentrations through the remnant pool.

It is also possible that the sample collected at Thompson Island Dam may not represent average water column PCB concentrations in this region of the river.

Grab sampling data collected at the west shore of Thompson Island Dam (HRM 188.5) may have limitations similar to those encountered at HRM 196.8 in the remnant deposit region of the river. These limitations in the data may prevent adequate characterization of source(s) upstream from the Thompson Island Dam.

As a result of the potential limitations of the current monitoring program and the anomalous data patterns observed in the water column, the *River Monitoring Test* was designed to address the potential limitations.

1.5. Program objectives

The *River Monitoring Test* report provides data to assess the adequacy of the current PCRDMP to meet the project objective of quantifying PCB flux from the remnant deposits. The results of this research program will be used to facilitate redesign of the PCRDMP, if required. Corollary objectives include:

- Evaluate contributions of PCBs from Hudson Falls, the Fort Edward 004 area deposit, and the remnant deposits.
- Confirm the existence of the anomalous Thompson Island Pool PCB loading.
- Evaluate the impact of the new Bakers Falls hydroelectric power plant on PCB loading and dynamics in that region of the river. Additional sampling and assessment is planned for 1996 to address this concern.

1.6. Approach

The *River Monitoring Test* was implemented according to the sampling and analysis plan developed for this project (O'Brien & Gere 1995b). This plan was submitted to the New York State Department of Environmental Conservation (NYSDEC), The New York State Department of Health (NYSDOH), and the U.S. Environmental Protection Agency (USEPA) for review and comment. Three events, consisting of water column sampling and analysis along transects perpendicular to river flow were planned. The transects were located downstream of suspected source areas (Subsection 1.2). Several stations along each transect were sampled for PCBs and TSS. This report summarizes the data from the two events performed in 1995. The third

event is planned for 1996. Before each river monitoring event began, the NYSDEC was notified (Appendix A).

Rhodamine WT dye was continuously added from a suspected PCB source area during the sampling events. Discrete water samples were collected from the sampling stations located along each transect and samples were analyzed for dye concentration. The dye data were used to evaluate the behavior of a continuous dissolved phase source and to interpret the PCB data.

Two events were performed during hydropower facility construction at Bakers Falls. The first event included dye release to the Bakers Falls plunge pool at the mouth of the tailrace tunnel on September 7, 1995. The second event included dye release at the Fort Edward former outfall 004 on October 3, 1995. A third event, planned for 1996 after the hydropower facility is fully operational, will include the release of dye and potentially dense plastic beads to simulate DNAPL behavior. The exact location of dye and bead injection is yet to be determined.

For each event, four transects were established to monitor the potential sources previously described in Subsection 1.2 (See Figure 1):

- The Canoe Carry (CC) transect was located between the Bakers Falls source(s) and the remnant deposits.

- The former outfall 004 transect was located immediately downstream of the Fort Edward facility former outfall (004). This location is downstream of remnant deposit 1 and immediately upstream of remnant deposits 2 and 3.

- The Fort Edward (FED) transect was positioned north of Rogers Island and the PCRDMP sampling station but immediately downstream of the remnant deposits and the former Fort Edward dam.

- The Thompson Island Pool (TIP) transect was located upstream of Thompson Island Dam.

Background samples were collected from the County Route 27 Bridge in Hudson Falls. On the same days that the transect studies were performed, the routine PCRDMP sampling was conducted to allow evaluation of the representativeness of PCRDMP sampling methods in characterizing PCB mass loading.

2. Methods

The transect studies consist of bathymetric surveys (i.e., river bottom topography) and hydrologic profile development (i.e., river depth and velocities) river flow monitoring, dye injection, and sampling and analysis for total (dissolved and particulate) PCBs, TSS, and dye. Before transect sampling events began, a preliminary round of sampling and analysis was performed at the CC transect on August 24, 1995. The purpose of this preliminary sampling was to verify sampling logistics, and in particular the ability to access this reach of the river, which is typically shallow and swift. The two rounds of transect sampling were conducted on September 7 and 8, and October 3 and 4, 1995.

Timelines of tasks completed during the two transect sampling events are presented in Figure 4. Photographs showing various aspects of sampling are presented in Appendix B. Sampling was timed so that the same parcel of water was monitored at each transect. A brief overview of PCB, TSS, and dye sampling activities is provided below.

Transect PCB and TSS samples. There were six sampling stations along each of four transects. Two samples were collected at each sampling station, one near the surface of the water column, and one near the bottom of the water column. Samples were composites of aliquots collected hourly over a 6-hour sampling period. Separate sample composites were made of the aliquots collected near the surface at each station and the aliquots collected near the bottom at each station.

To summarize, the PCB and TSS sample collection included:

- four transects
- six stations per transect
- six surface composite samples at each station
- six bottom composite samples at each station
- total of twelve samples per transect.

Dye samples. Samples for dye analysis were collected in the same manner and at the same frequency as the PCB/TSS samples; however, the dye samples were not composited.

The dye sampling included:

- four transects
- six stations per transect
- six discrete surface samples collected at each station per round
- six discrete bottom samples collected at each station per round
- total of seventy-two samples per transect.

Additional details of transect sample locations and collection procedures are provided in Subsections 2.4 and 2.5, respectively.

2.1. Bathymetric surveys and hydrologic profile development

Since one of the goals of the test was to estimate the PCB mass associated with each source, it was necessary to convert the measured PCB concentrations into total PCB mass. This required estimation of the water volume passing each station within a transect. To do this necessitated the measurement of river bathymetry, water elevation at the sampling locations and instantaneous flow velocities. A bathymetric survey was performed at each transect following installation of the transect sampling buoys (Subsection 2.4). River bed elevations were obtained at approximately 15 stations across the river channel using a surveying instrument. Bathymetric data was obtained at each proposed sampling station, at approximate mid-points between the sampling stations, and at each shoreline (Figure 5). The elevations were relative to benchmarks which were set on shore adjacent to each transect. The approximate locations of each station were obtained using the survey stadia technique. Bathymetric survey data are summarized in Table 1.

Bathymetric profiles were developed for each transect and cross-sectional sub-areas within each transect (Figure 5).The profiles presented in Figure 5 represent conditions observed during preliminary field activities at the CC transect (August 24, 1995); 004 transect (August 23, 1995); and FED and TIP transects (August 25, 1995). Cross-sectional areas were obtained by computer aided design interpretation of river bed geometry.

Hydrologic profiles were developed by using the bathymetric data, and velocity measurements obtained using a Marsh-McBirney model 201 water velocity meter. The hydrologic profiles obtained during preliminary field work were adjusted to represent conditions experienced during the transect

sampling events based on water depth and velocity data obtained at the time of sampling. Percentage of total flow for each sub-area for each sampling event was calculated using this information (Table 1). The mean of the percentages of total flow for each sub-area calculated during the bathymetric surveys and each monitoring event was used to calculate PCB and dye mass transport within individual sub-areas along each transect. Flow data obtained from USGS gaging station at Fort Edward were comparable to calculated flows (Table 2).

2.2. Flow monitoring

The flow rate of the Hudson River was monitored during both events by obtaining instantaneous water levels from the USGS gaging station in Fort Edward. Considerable variability in river flow rate was observed during each event, likely due to intermittent operation of several hydroelectric facilities which are located upstream of the project area (O'Brien & Gere 1995e). This condition was pronounced due to the drought conditions experienced in New York State during the summer of 1995, which resulted in minimal base flow conditions in the river without releases from upstream reservoirs, most notably from Great Sacandaga Lake. Since the sampling events were completed, provisional flow data from the Fort Edward gaging station have been obtained from USGS for the river test periods (Table 2).

2.3. Dye injection

Transect studies included the continuous release of Rhodamine WT dye over a 6 to 7-hour period to simulate the behavior of a dissolved phase PCB source, and to assess the lateral mixing regime in downstream portions of the river. As presented previously, dye was injected into the Bakers Falls plunge pool during the first event. In the second event, dye was injected into the river from the Fort Edward former outfall 004 area. Dye loading was calculated based upon the analytical detection limit of Rhodamine WT dye (0.1 μg/L) and a target concentration of 1 μg/L (Appendix C).

At concentrations less than 100 μg/L, the dye is not visible, but can be detected in the field using a field fluorometer (Subsection 2.6). A working concentration of dye was prepared by mixing 20 percent dye with Hudson River water in 55-gallon drums. The dye and Hudson River water mixture was discharged to the river using a Masterflex chemical feed pump for a

minimum of six hours during each event. During the dye release period, the flow rate of the Hudson River at the Fort Edward USGS gaging station was monitored at approximately 30 minute intervals. Field dye monitoring conducted at downstream sampling locations verified that the dye concentration was at or below the target concentration of 1 μg/L. Sampling was initiated at each transect when stabilized dye concentrations were observed during field monitoring (Subsection 2.6).

2.3.1. Event 1 (September 7 and 8, 1995)

During event 1, dye was released from approximately 10:30 until approximately 17:00 on September 7, 1995 (Figure 4). Dye was released from an area adjacent to the tailrace tunnel outlet, on the east shore of the Hudson River, at the base of Bakers Falls (Appendix B, photographs 1 and 2). To achieve the desired concentration in the river, a 0.5 percent dye solution was discharged to the river at a controlled rate of approximately 1020 ml/min using the dye feed pump.

2.3.2. Event 2 (October 3 and 4, 1995)

During event 2, dye was released from approximately 09:30 to approximately 16:00 on October 3, 1995 (Figure 4). Dye was released from the east shore of the Hudson River, adjacent to the GE Fort Edward facility's former outfall 004 (Figure 1; Appendix B, photographs 7 and 8). The dye injection station was set-up at the top of the steep bank above former outfall 004. Polyethylene tubing was routed from the top of the bank to the river adjacent to the outfall. Dye was then discharged through this tubing into the river using the dye feed pump. A one percent solution was discharged to the river at a controlled rate of 560 and 510 ml/min from 09:30 to 13:00 and from 13:00 to 16:00, respectively.

2.4. Sample locations

Sampling locations were established during reconnaissance of the river between Bakers Falls and Thompson Island Dam by O'Brien & Gere personnel during the week of August 21, 1995. This reconnaissance included selection of transect locations and identification of access routes. Based on this reconnaissance, transect locations were selected as follows (Figure 1):

CC transect. This transect was located approximately 200 feet downstream of the routine canoe carry monitoring location at HRM 196.8 (Figure 1). This location was positioned downstream of the routine sampling location so that the transect could be located in an area of the river which was less turbulent.

004 transect. This transect location was selected to monitor river conditions downstream of the GE Fort Edward facility's outfall 004 discharge, but upstream of the remnant deposits (with the exception of remnant 1). The transect extended from the upstream end of the rip-rap on Remnant Deposit 2 to the upstream end of Remnant Deposit 3 (Figure 1).

FED transect. This transect location was approximately 1,500 feet upstream of the routine Fort Edward sampling location (HRM 194.2) and 500 feet downstream of the former Fort Edward Dam location (Figure 1). This location was selected upstream of where the river splits into two channels at Rogers Island so that the river could be monitored along one transect. The river channel along this transect is typically more shallow with higher flow velocities than the channel at the routine PCRDMP monitoring location.

TIP transect. This transect was located approximately 500 feet upstream of Thompson Island Dam (HRM 188.5), just upstream of the point where the river widens and splits into two channels (Figure 1). The routine PCRDMP sampling location is on the west wing wall of the dam.

Upon selection of transect locations, buoys were anchored at six stations across the river channel at each transect. The stations were spaced to maximize the spatial resolution of sampling in suspected PCB mass loading parcels along each transect. To facilitate subsequent sample collection during the *River Monitoring Test* sampling events, the buoys were left in place. In addition to the transect sampling locations, a background station was established at the Route 27 bridge located adjacent to the old Fenimore Bridge in Hudson.

2.5. Sample collection procedures

Sample collection procedures are presented for preliminary sampling conducted in August 1995 (at the CC transect) and transect sampling conducted in September and October 1995. Samples were collected with a Kemmerer sampler where water depths permitted. Otherwise, for the areas where water depths are too shallow to permit use of a Kemmerer sampler, a

grab sample was collected. Composites were formed by discharging a portion of the contents of the Kemmerer sampler directly into a sampling container. The sample containers were pre-marked in approximately one-sixth increments to guide preparation of the temporal composite.

The timing of sampling was estimated based on field experience during float surveys conducted for the PCRDMP (O'Brien & Gere 1994a, 1993b), bathymetric data (Subsection 2.1), time of travel studies (Tofflemire 1984; USGS 1969), and field dye monitoring (Subsection 2.6). Transect sample collection was performed according to time line presented as Figure 4. Specific details of sample collection procedures for each location are provided below.

2.5.1. Sample collection at the background station

For event 1, a surface composite sample was collected using a stainless steel bucket lowered into the river from the Bridge Street Bridge (County Route 27) located at HRM 197.0. For event 2, surface and deep water composite samples were collected using a Kemmerer sampler and a stainless steel collection bucket. Sample aliquots were distributed from the stainless steel bucket to the sample bottles.

2.5.2. Sample collection at the Canoe Carry transect

This reach of the river was difficult to access. Before samples were collected, a rope guide was installed across the river at the transect location, secured to trees at opposite sides of the river. Sampling stations were accessed by a small boat using the rope guide to maintain position. Following completion of sampling, the rope guide was removed.

Preliminary sampling. Preliminary sampling at the CC transect was conducted on August 24, 1995. For this sampling, transect composited samples of six equal volume aliquots were collected hourly over a three hour period. The preliminary sampling performed at the CC transect indicated that traversing the river at this location was feasible at low to moderate flows. Elevated flows increased the difficulty of maneuvering the boat safely. Additionally, the Kemmerer sampler tended to drift downstream with the high flow velocities observed at stations 4 and 5. This condition was remedied in subsequent sampling events by clamping the sampler to a piece of rigid conduit which was held vertically to maintain the position of the sampler.

At the beginning of each sampling round, a water depth was recorded at the first sampling station (CC-1). Surface samples were collected using a 500-ml stainless steel beaker. Deep samples were collected using a 0.4-liter stainless steel Kemmerer sampler. Samples were transferred from the Kemmerer samples to the sample bottles. Deep samples were collected approximately 0.25 feet off the bottom.

Event 1. Sampling was initiated at 12:00 on September 7, 1995. Dye monitoring was performed approximately 200 feet upstream of this transect to evaluate the movement of the dye front, dye dispersion characteristics and stabilization of dye concentrations (Subsection 2.6). Sampling was initiated following stabilization of dye concentrations in the river, as concentrations approached the target concentration of 1 μg/L. Water velocities were recorded at approximately 12:30 after the first sampling round.

Event 2. Sampling was initiated at 10:00 on October 3, 1995 when dye concentrations, measured by the field fluorometer set up at transect 004 were judged representative (Subsection 2.6). Water velocities were recorded at approximately 11:30 and 14:30 during the second and fifth sampling rounds, respectively. Since the dye was injected downstream of the transect in event 2, samples for dye analysis were not collected.

2.5.3. Sample collection at the former outfall 004 transect

Surface samples were collected using a 500-ml stainless steel beaker. Deep samples were collected using a 1.2-liter stainless steel Kemmerer sampler. At station 1, the water depth was approximately 3 feet and the deep sample was collected using routine sampling methods, by lowering the Kemmerer in the water by the rope and collecting a sample. At the other locations, shallow water depths made routine depth sampling with the Kemmerer sampler impractical. Instead, the sampling stations were accessed by wading and the depth sample was collected by manually holding the Kemmerer sampler horizontal in the water column approximately six inches from the bottom and allowing the water to flow through. The sampler was closed manually and lifted into the boat where a depth aliquot was dispensed into the appropriate sample bottles.

Event 1. Sampling was initiated at 12:20 on September 7, 1995 based on time of travel calculations which estimated time of arrival of the water mass which initiated sampling at the CC transect. Water velocities were recorded at approximately 15:00 after the fourth sampling round.

Event 2. Sampling was initiated at 10:00 on October 3, 1995 when dye monitoring conducted from the sampling boat at transect 004 were judged representative of anticipated dye dispersion (Subsection 2.6). Water velocities were recorded at approximately 11:30, 12:00, and 13:00 and during the second, third, and fourth sampling rounds, respectively.

2.5.4. Sample collection at the Fort Edward transect

Water depth at this transect was generally two feet or less. Surface and depth samples were collected by lowering a 1-liter glass bottle into the water. Surface sample aliquots were collected at the surface zero to three inches deep. A depth sample was collected by holding the bottle opening closed until it was lowered to the desired sampling depth, approximately three to six inches off of the bottom. Aliquots were distributed from the sample collection bottle to the appropriate sample containers.

Event 1. Sampling was initiated at 13:45 on September 7, 1995 based on time of travel calculations which estimated time of arrival of the water mass which initiated sampling at the CC transect. Water velocities were recorded at approximately 17:00 during the third sampling round. Dye monitoring was conducted at Rogers Island (Subsection 2.6).

Event 2. Sampling was initiated at 11:20 on October 3, 1995 when dye monitoring conducted from the sampling boat at this transect were judged representative of anticipated dye dispersion (Subsection 2.6). Water velocities were recorded at approximately 14:45 during the fourth sampling round.

2.5.5. Sample collection at the Thompson Island Pool transect

Due to the strong wind and related positioning difficulties, it was not possible to measure depths at sampling station TIP-1 at the same exact location each round. Flow at the Fort Edward gaging station was tracked closely during the sampling.

TIP transect samples were collected from a boat. Before samples were collected the boat was anchored upstream and allowed to drift into place. The boat engine was used to assist positioning. Wind and current tended to make the anchor drag on several occasions before it took hold. Aliquots were collected using the 0.4-liter stainless steel Kemmerer sampler. Aliquots were distributed to the appropriate bottles. Water depths and velocities were recorded at each sampling location during each sampling round.

Event 1. Sampling was initiated at 10:30 on September 8, 1995 based on field dye monitoring conducted from the sampling boat which indicated stabilized dye concentrations of approximately 0.6 μg/L (Subsection 2.6).

Event 2. Sampling was initiated at 16:10 on October 4, 1995 based on field dye monitoring conducted from the sampling boat which indicated dye concentrations of approximately 0.2 μg/L (Subsection 2.6).

2.6. Field dye monitoring

During the transect sampling activities, real-time dye concentrations were monitored in the field using a field fluorometer (Subsection 2.8.2; Appendix B, photographs 5 and 12). The progress of the dye front and the stability of the dye concentrations at the sampling transects were evaluated in the field using the data generated from these field analyses. Once the dye concentrations or dispersion patterns stabilized, sampling at the transect was initiated. The field fluorometer was used at three of the transects in each sampling event, as described below.

2.6.1. Event 1 (September 7 and 8, 1995)

Event 1 dye monitoring was conducted according to the event timeline (Figure 4).

CC transect - Dye monitoring was conducted at the west shore of the main channel (east shore of the small island) at the PCRDMP Canoe Carry sample location (Figure 1). The field fluorometer was stationed near the shore, and the inlet hose for the instrument was anchored in the river approximately ten feet off shore, perpendicular to the shoreline. Dye monitoring and dye injection were initiated concurrently. Dye concentrations were recorded at approximate five-minute intervals. Concentrations stabilized approximately one hour after dye injection began.

FED transect - Dye was monitored from the northwest shore of Roger's Island, adjacent to the boat launch area (Figure 1). The field fluorometer was stationed near the shore, and the inlet hose for the instrument was extended approximately 20 feet into the west channel of the river, perpendicular to the shoreline. To monitor dye concentrations mid-water column, the hose was secured at an approximate depth of three feet below

the water surface. Concentrations were recorded at Roger's Island at approximate five minute intervals. Monitoring at this location began approximately three hours after dye injection began, and continued until sampling at the Fort Edward transect was complete.

TIP transect - Dye concentrations were monitored from the sampling boat. The fluorometer inlet hose was extended over the side of the boat into the water. Intermittent monitoring was conducted as the boat traveled from Roger's Island to the Thompson Island Pool transect sampling location (Figure 1). The progression of the dye through the pool was monitored until the dye concentrations stabilized at the TIP transect, then dye concentrations were monitored during each round of transect sampling.

2.6.2. Event 2 (October 3 and 4, 1995)

Event 2 dye monitoring was conducted according to the event timeline (Figure 4). Since dye injection was downstream of the CC transect, dye monitoring at that location was not necessary. Monitoring at the other sampling locations is discussed below.

004 transect - Dye was monitored from the sampling boat. The fluorometer inlet hose extended over the side of the boat into the water. Intermittent monitoring was conducted, generally along the east shore. Once the dye dispersion pattern stabilized, sampling began at the 004 transect. Then, dye monitoring was discontinued at this location and the field fluorometer was transported to the FED transect.

FED transect - Dye was monitored from the sampling boat. The inlet hose extended over the side of the boat into the water. The hose was secured to the side of the boat to keep the end of the hose submerged. Initial dye monitoring was conducted across the transect to identify the progression of the dye front. During FED transect sampling, dye concentrations were monitored at each transect station.

Roger's Island - After completing sampling at the FED transect, dye progression was monitored around Roger's Island (Figure 6). Starting from the boat launch on the northwest shore of Roger's Island, dye progression was monitored traveling south at six locations in the west channel. In addition, dye concentrations were sampled at one location in the center of the east channel north of the confluence of the Champlain Canal.

TIP transect - Similar to Event 1, dye was monitored from the sampling boat. The fluorometer inlet hose was extended over the side of the boat into the water and Intermittent monitoring was conducted as the boat traversed Thompson Island Pool, between Roger's Island and the TIP transect. The progression of the dye through the pool was monitored until the dye concentrations stabilized at the TIP transect, then dye concentrations were monitored during each round of transect sampling.

2.7. Sample handling

Upon collection, PCB, TSS and dye samples were placed in bottles consisting of 1-liter clear Boston type, 500-ml plastic, and 125-ml amber glass bottles, respectively. PCB and TSS samples were chilled with ice to approximately four degrees C. Following completion of field activities, the PCB and TSS samples were transported to Northeast Analytical, Inc. (NEA) for analysis. Dye samples were stored in the dark and were transported to O'Brien & Gere Engineers office in Syracuse for analysis.

Each sample was assigned a unique sample designation, identifying sample location, and date and time of sample collection as described in the *River Monitoring Test* SAP (O'Brien & Gere 1995a). Chain of custody procedures utilized for the program are presented in the PCRDMP QAPP (O'Brien & Gere Engineers, Inc. 1992a). Copies of chains of custody and field logs are provided in Appendices D and E, respectively.

2.8. Analytical testing program

2.8.1. PCBs and TSS

Preliminary sampling. Samples collected during preliminary sampling were submitted for laboratory analysis for PCBs (USEPA method 8080) and total suspended solids (USEPA method 160.2).

Transect sampling. For the transect sampling events analytical methods for PCBs and TSS were the same as those used in the PCRDMP. PCBs were analyzed by capillary column using method NEA608CAP and TSS were analyzed by USEPA Method 160.2 as described in the PCRDMP QAPP (O'Brien & Gere 1992b). Standard laboratory packages were provided.

2.8.2. Dye

Dye was analyzed in the field and in the laboratory. Dye monitoring in the field was conducted as described in Subsection 2.6 above, using a field fluorometer (Turner Design Model 10 series) according to methods described in the operations manual for the instrument. The field fluorometer was calibrated in the field using field-mixed standard solutions of Rhodamine WT dye and Hudson River water. The instrument was operated in a continuous sampling mode, and readings were recorded at discrete intervals. Laboratory analysis of dye was conducted following procedures provided in the operating manual for the laboratory fluorometer as presented in the *River Monitoring Test* addendum to the PCRDMP QAPP (O'Brien & Gere 1995a). A summary of dye analytical methods for both field and laboratory analyses is provided in Appendix F.

Dye concentrations measured in the field are considered approximate due to limitations of field methods employed. This level of detail was sufficient for the intended use of the data. However, due to these limitations field dye concentrations may not be directly comparable to laboratory dye concentrations and the laboratory values are considered more accurate.

2.9. Field equipment decontamination

Dedicated sampling equipment was used for each transect. Prior to each transect sampling event, field equipment was decontaminated according to procedures presented in the QAPP developed for the PCRDMP (O'Brien & Gere 1992b). Subsequently, the sampling equipment was rinsed several times with river water prior to sampling at each station.

2.10. Quality assurance/quality control

Field Quality Assurance/Quality Control activities were conducted according to procedures presented in the QAPP developed for the PCRDMP (O'Brien & Gere 1992b) and the addendum to the QAPP presented in the *River Monitoring Test* SAP (O'Brien & Gere 1995a). For each round of sampling, QA/QC samples consisted of collection of matrix spike, blind duplicate, and equipment blank samples as specified in the table below.

	QA/QC Sample Frequency		
Analysis	MS	DUP	EQBL
PCBs	2/event 1 3/event 2	1/transect	1/transect
TSS	NA	1/transect	NA
dye	NA	1/20	NA

Note: NA = not applicable

PCRDMP sampling conducted concurrently with transect sampling also included a matrix spike, blind duplicate, and equipment blank.

A Tier 1 review of QA/QC data was conducted consisting of review of holding times, matrix spike recoveries, duplicate relative percent differences (RPD), and equipment blank results. The results of this review are presented in Subsection 3.4.

2.11. Health and safety

Field activities were conducted in accordance with health and safety procedures described in the Health and Safety Plan developed for the PCRDMP (O'Brien & Gere 1992c) and the addendum to the health and safety plan provided in the *River Monitoring Test* SAP (O'Brien & Gere 1995b).

3. Results

3.1. Preliminary field work

The results of CC transect sampling conducted during preliminary field work are presented in Table 3. PCB laboratory reports for preliminary sampling are presented in Volume 1 of Appendix G.

3.2. Event 1

Event 1 data are presented as follows:

- PCB results are presented in Table 4 and Figure 7. PCB laboratory reports for Event 1 are presented in Volume 1 of Appendix G.
- TSS results are also presented in Table 4. TSS laboratory reports are presented in Appendix H.
- Laboratory dye concentration data are presented in Table 5 and Figure 8. The figure includes a hydrograph for flow monitoring at Fort Edward during event 1. Field dye monitoring results are presented in Appendix F.
- PCB mass transport data for each transect are presented in Table 6 and Figure 9. PCB mass transport data for each station within each transect are presented in Appendix I.
- PCB homolog distributions are presented in Table 7 and Appendix J. Mean PCB homolog distributions are presented in Figure 10.
- PCB congener distributions for Thompson Island pool are presented in Appendix K.

- For comparison, PCRDMP total PCB results for samples collected on September 7, 1995 are presented in Table 8.
- USGS flow data are presented in Table 2.

3.3. Event 2

Event 2 data are presented as follows:

- PCB results are presented in Table 4 and Figure 11. PCB laboratory reports for Event 2 are presented in Volume 2 of Appendix G.
- TSS results are also presented in Table 4. TSS laboratory reports are presented in Appendix H.
- Laboratory dye concentration data are presented in Table 5 and Figure 12. The figure includes a hydrograph for flow monitoring at Fort Edward during event 2. Field dye monitoring results are presented in Appendix F.
- Results of field dye monitoring in the vicinity of Roger's Island are presented in Figure 6.
- PCB mass transport data for each transect are presented in Table 6 and Figure 9. PCB mass transport data for each station within each transect are presented in Appendix I.
- PCB homolog distributions are presented in Table 7 and Appendix J. Mean PCB homolog distributions are presented in Figure 13.
- PCB congener distributions for Thompson Island pool are presented in Appendix K.
- For comparison, PCRDMP total PCB results for samples collected on October 3, 1995 are presented in Table 8.
- USGS flow data are presented in Table 2.

3.4. Quality assurance/quality control

A tier 1 QA/QC review of data was conducted. From this review it was concluded that the data quality was acceptable for intended purposes. A summary of the review for PCB analyses is provided below:

- PCB samples were analyzed within prescribed holding times.
- Matrix spike recoveries were within prescribed recovery limits of 70 to 130 percent (Table 9).
- Duplicate were within the prescribed limit of 25 percent except the duplicate collected at FED transect during Event 1 (Table 9).
- Equipment blanks were less than the detection limit, except those collected at transect 004. The Kemmerer sampler at used at transect 004 was also used in the PCRDMP and similar contamination problems were observed from the use of this equipment in that program. The contamination problem is believed to be attributed to extraction of debris hidden in the fittings of the device during the solvent rinse step of equipment decontamination. Results of samples collected using the sample are comparable with results where no contamination was present. Preliminary conclusions indicate that the use of the contaminated sampler does not appear to have an observable effect on the field data. However, investigation of the contamination issue is not complete at this time.

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Tables

Table 1

General Electric Company
Hudson River Project
River Monitoring Test

1995 Hydrologic Survey Data [1]

Transect	Sample Location (River width)	Date	Approx. Time	Water Depth	X-Sectional Area (ft2)	Avg. Velocity (ft/sec)	Instantaneous Flow (cfs)	% of Total Flow	Estimated Time of Travel (hrs)	Flow at Ft. Edward(cfs)
Canoe Carry	CC-1	08/24/95	16:30	1.0	47.3	0.50	23.7	1.3	--	--
	(75 ft)	09/07/95	12:30	0.9	39.8	0.70	27.9	2.2	--	--
		10/03/95	11:30	1.4	77.3	0.36	27.8	1.3	--	--
		mean		--	54.8	0.52	26	1.6	--	--
		std dev		--	16.2	0.14	2	0.4	--	--
	CC-2	08/24/95	16:30	--	48.4	0.35	16.9	0.9	--	--
	(55 ft)	09/07/95	12:30	--	42.9	1.10	47.2	3.7	--	--
		10/03/95	11:30	--	70.4	0.60	42.2	2.0	--	--
		mean		--	53.9	0.68	35	2.2	--	--
		std dev		--	11.9	0.31	13	1.2	--	--
	CC-3	08/24/95	16:30	--	54.5	1.00	54.5	3.0	--	--
	(37 ft)	09/07/95	12:30	--	50.8	0.60	30.5	2.4	--	--
		10/03/95	11:30	--	69.3	0.70	48.5	2.3	--	--
		mean		--	58.2	0.77	44	2.6	--	--
		std dev		--	8.0	0.17	10	0.3	--	--
	CC-4	08/24/95	16:30	--	133.9	2.50	334.8	18.4	--	--
	(23 ft)	09/07/95	12:30	--	130.2	1.70	221.3	17.4	--	--
		10/03/95	11:30	--	143.1	2.33	333.4	16.5	--	--
		mean		--	135.7	2.18	297	17.1	--	--
		std dev		--	5.4	0.34	53	1.2	--	--
	CC-5	08/24/95	16:30	--	366.6	3.30	1209.8	66.4	--	--
	(72 ft)	09/07/95	12:30	--	359.4	2.20	790.7	62.3	--	--
		10/03/95	11:30	--	395.4	3.33	1316.7	61.3	--	--
		mean		--	373.8	2.94	1106	63.4	--	--
		std dev		--	15.6	0.53	227	2.2	--	--
	CC-6	08/24/95	16:30	--	129.3	1.40	181.0	9.9	--	--
	(128 ft)	09/07/95	12:30	--	116.5	1.30	151.5	11.9	--	--
		10/03/95	11:30	--	180.5	2.10	379.1	17.6	--	--
		mean		--	142.1	1.60	237	13.2	--	--
		std dev		--	27.7	0.36	101	3.3	--	--
	(Total)	08/24/95	16:30	--	780.0	--	1820.6	100.0	--	--
	(390 ft)	09/07/95	12:30	--	739.6	--	1269.0	100.0	1.4	1413
		10/03/95	11:30	--	936.0	--	2147.7	100.0	1.4	1850
		mean		--	818.5	--	1746	100.0	--	--
		std dev		--	84.7	--	363	--	--	--

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Table 1

General Electric Company
Hudson River Project
River Monitoring Test

1995 Hydrologic Survey Data [1]

Transect	Sample Location (River width)	Date	Approx. Time	Water Depth	X-Sectional Area (ft2)	Avg. Velocity (ft/sec)	Instantaneous Flow (cfs)	% of Total Flow	Estimated Time of Travel (hrs)	Flow at Ft. Edward(cfs)
004	004-1	08/23/95	15:30	3.3	311.7	2.70	841.6	23.4	--	--
	(110 ft)	09/07/95	15:00	3.0	278.7	2.40	668.9	27.3	--	--
		10/03/95	11:15	2.6	234.7	3.30	774.5	33.0	--	--
		mean		--	275.0	2.8	762	27.9	--	--
		std dev		--	31.5	0.4	71	3.9	--	--
	004-2	08/23/95	15:30	--	248.7	2.40	596.9	16.6	--	--
	(80 ft)	09/07/95	15:00	--	224.7	1.20	269.6	11.0	--	--
		10/03/95	11:15	--	192.7	2.00	385.4	16.4	--	--
		mean		--	222.0	1.9	417	14.7	--	--
		std dev		--	22.9	0.5	136	2.6	--	--
	004-3	08/23/95	15:30	--	205.0	2.40	492.0	13.7	--	--
	(100 ft)	09/07/95	15:00	--	175.0	1.20	210.0	8.6	--	--
		10/03/95	11:15	--	135.0	1.50	202.5	8.6	--	--
		mean		--	171.7	1.7	302	10.3	--	--
		std dev		--	28.7	0.5	135	2.4	--	--
	004-4	08/23/95	15:30	--	204.0	2.40	489.6	13.6	--	--
	(100 ft)	09/07/95	15:00	--	174.0	2.10	365.4	14.9	--	--
		10/03/95	11:15	--	134.0	1.50	201.0	8.6	--	--
		mean		--	170.7	2.0	352	12.4	--	--
		std dev		--	28.7	0.4	118	2.7	--	--
	004-5	08/23/95	15:30	--	176.8	4.00	707.2	19.7	--	--
	(80 ft)	09/07/95	15:00	--	152.8	3.10	473.5	19.3	--	--
		10/03/95	11:15	--	120.8	4.00	483.2	20.6	--	--
		mean		--	150.1	3.7	555	19.9	--	--
		std dev		--	22.9	0.4	108	0.5	--	--
	004-6	08/23/95	15:30	--	185.3	2.50	463.3	12.9	--	--
	(120 ft)	09/07/95	15:00	--	149.3	3.10	462.7	16.9	--	--
		10/03/95	11:15	--	101.3	3.00	303.9	12.9	--	--
		mean		--	145.3	2.9	410	14.9	--	--
		std dev		--	34.4	0.3	75	2.6	--	--
	(Total)	08/23/95	15:30	--	1331.5	--	3590.5	100.0	--	--
	(590 ft)	09/07/95	15:00	--	1154.4	--	2450.1	100.0	1.0	2707
		10/03/95	11:15	--	918.5	--	2350.5	100.0	1.0	2050
		mean		--	1134.8	--	2797	100.0	--	--
		std dev		--	169.2	--	563	--	--	--

Table 1

General Electric Company
Hudson River Project
River Monitoring Test

1995 Hydrologic Survey Data [1]

Transect	Sample Location (River width)	Date	Approx. Time	Water Depth	X-Sectional Area (ft2)	Avg. Velocity (ft/sec)	Instantaneous Flow (cfs)	% of Total Flow	Estimated Time of Travel (hrs)	Flow at Ft. Edward(cfs)
Ft. Edward	FED-1	08/25/95	08:30	1.0	73.9	1.60	118.2	15.4	–	–
	(160 ft)	09/07/95	17:00	2.3	265.9	2.10	558.3	22.2	–	–
		10/03/95	14:45	2.1	233.9	2.50	584.8	21.4	–	–
		mean		–	191.2	2.1	420	19.7	–	–
		std dev		–	84.0	0.4	214	3.0	–	–
	FED-2	08/25/95	08:30	–	84.1	1.40	117.7	15.4	–	–
	(85 ft)	09/07/95	17:00	–	166.0	1.60	265.5	10.6	–	–
		10/03/95	14:45	–	152.4	2.00	304.8	11.2	–	–
		mean		–	134.1	1.7	229	12.4	–	–
		std dev		–	35.8	0.2	81	2.1	–	–
	FED-3	08/25/95	08:30	–	58.0	1.20	69.6	9.1	–	–
	(80 ft)	09/07/95	17:00	–	154.0	1.80	277.2	11.0	–	–
		10/03/95	14:45	–	138.0	1.50	207.0	7.6	–	–
		mean	–	–	116.7	1.5	185	9.2	–	–
		std dev	–	–	42.0	0.2	86	1.4	–	–
	FED-4	08/25/95	08:30	–	75.6	1.20	90.7	11.9	–	–
	(80 ft)	09/07/95	17:00	–	171.6	1.70	291.7	11.6	–	–
		10/03/95	14:45	–	155.6	1.50	233.4	8.6	–	–
		mean		–	134.3	1.5	205	10.7	–	–
		std dev		–	42.0	0.2	84	1.5	–	–
	FED-5	08/25/95	08:30	–	103.6	1.20	124.3	16.2	–	–
	(90 ft)	09/07/95	17:00	–	211.6	1.90	402.0	16.0	–	–
		10/03/95	14:45	–	193.6	3.00	580.8	21.3	–	–
		mean		–	169.6	2.0	369	17.9	–	–
		std dev		–	47.2	0.7	188	2.4	–	–
	FED-6	08/25/95	08:30	–	174.8	1.40	244.7	32.0	–	–
	(155 ft)	09/07/95	17:00	–	357.2	2.00	714.4	28.5	–	–
		10/03/95	14:45	–	326.8	2.50	817.0	30.0	–	–
		mean		–	286.3	2.0	592	30.1	–	–
		std dev		–	79.8	0.4	249	1.4	–	–
	Total	08/25/95	08:30	–	569.9	–	765.2	100.0	–	–
	(630 ft)	09/07/95	17:00	–	1326.2	–	2509.2	100.0	0.1	2733
		10/03/95	14:45	–	1200.3	–	2727.8	100.0	0.1	2424
		mean		–	1032.1	–	2001	100.0	–	–
		std dev		–	330.9	–	878	–	–	–

Table 1

General Electric Company
Hudson River Project
River Monitoring Test

1995 Hydrologic Survey Data [1]

Transect	Sample Location (River width)	Date	Approx. Time	Water Depth	X-Sectional Area (ft2)	Avg. Velocity (ft/sec)	Instantaneous Flow (cfs)	% of Total Flow	Estimated Time of Travel (hrs)	Flow at Ft. Edward(cfs)
Thompson Island Pool	TIP-1 (215 ft)	08/25/95	11:30	5.4	702.0	0.13	91.3	7.7	--	--
		09/08/95	07:30	6.1	851.4	0.30	255.4	14.1	--	--
		10/04/95	18:00	6.2	872.7	0.15	130.9	4.6	--	--
		mean		--	808.7	0.2	159	8.8	--	--
		std dev		--	75.9	0.1	70	4.0	--	--
	TIP-2 (80 ft)	08/25/95	11:30	--	437.5	0.22	96.3	8.1	--	--
		09/08/95	07:30	--	519.5	0.20	103.9	5.7	--	--
		10/04/95	18:00	--	601.5	0.20	120.3	4.2	--	--
		mean		--	519.5	0.2	107	6.0	--	--
		std dev		--	67.0	0.0	10	1.6	--	--
	TIP-3 (75 ft)	08/25/95	11:30	--	708.0	0.40	283.2	23.8	--	--
		09/08/95	07:30	--	760.5	0.50	380.3	21.0	--	--
		10/04/95	18:00	--	768.0	0.47	361.0	12.6	--	--
		mean		--	745.5	0.5	341	19.1	--	--
		std dev		--	26.7	0.0	42	4.7	--	--
	TIP-4 (125 ft)	08/25/95	11:30	--	1015.2	0.20	203.0	17.0	--	--
		09/08/95	07:30	--	1102.7	0.20	220.5	12.2	--	--
		10/04/95	18:00	--	1115.2	0.57	635.7	22.2	--	--
		mean		--	1077.7	0.3	353	17.1	--	--
		std dev		--	44.5	0.2	200	4.1	--	--
	TIP-5 (100 ft)	08/25/95	11:30	--	855.5	0.10	85.6	7.2	--	--
		09/08/95	07:30	--	924.1	0.30 *	277.2	15.3	--	--
		10/04/95	18:00	--	933.9	0.55	513.6	18.0	--	--
		mean		--	904.5	0.3	292	13.5	--	--
		std dev		--	34.9	0.2	175	4.6	--	--
	TIP-6 (170 ft)	08/25/95	11:30	--	1311.1	0.33	432.6	36.3	--	--
		09/08/95	07:30	--	1430.1	0.40	572.0	31.6	--	--
		10/04/95	18:00	--	1447.1	0.76	1099.8	38.4	--	--
		mean		--	1396.1	0.5	701	35.4	--	--
		std dev		--	80.5	0.2	287	2.6	--	--
	Total (765 ft)	08/25/95	11:30	--	5029.2	--	1191.9	100.0	--	--
		09/08/95	07:30	--	5588.2	--	1809.4	100.0	18.0	1718
		10/04/95	18:00	--	5738.4	--	2861.3	100.0	27.0	2424
		mean		--	5451.9	--	1954	--	--	--
		std dev		--	305.1	--	689	--	--	--

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Table 1

General Electric Company
Hudson River Project
River Monitoring Test

1995 Hydrologic Survey Data (1)

Notes:

* Estimated value

(1)

Water depth was measured at Station 1 of each transect and compared to initial bathymetric data collected during preliminary field work as a benchmark.

Cross-sectional area was calculated from bathymetric data presented in Figure 5 using computer aided design. For each event, changes in water depth at Station 1 of each transect were used to recalculate cross-sectional areas. Changes in water elevation at Station 1 of each transect were assumed to be consistent across the width of the river. In addition, it was assumed that changes in water elevation did not impact the lateral extent of the cross sections. Therefore, the cross-sectional area was calculated for each sampling event using the results of bathymetric survey data as a baseline. An increase in water elevation resulted in a corresponding increase in cross-sectional area, calculated as the product of the elevational change and the baseline width of the transect (or transect sub-area). This area change was added to the baseline area identified during the bathymetric survey. Decreases in area corresponding to decreases in water elevation were calculated in a similar manner, but the calculated change in area was subtracted from the baseline area.

Average velocity Velocities were measured in the field at several locations within each sub-area. The mean of the velocities within each sub-area was calculated from these values.

Instantaneous flow Calculated as the product of the average velocities and cross-sectional area.

% of total flow Calculated for each set of bathymetric data and a mean was derived.

Estimated time of travel Based on field experience during float surveys conducted for the PCRDMP, bathymetric data, USGS time of travel studies, and field dye monitoring.

Flow at Fort Edward Instantaneous readings obtained from the USGS Fort Edward gaging station during field activities are presented. Instantaneous readings were comparable to data reported by USGS (Table 2).

Table 2
General Electric Company
Hudson River Project River Monitoring Test

USGS Instantaneous Hourly Flow Data
Fort Edward Gauging Station

Event 1

Date	Elapsed Time	Time	Estimated Flow (cfs)
07-Sep-95	--	01:30	1,394
	--	02:30	1,593
	--	03:30	2,225
	--	04:30	2,152
	--	05:30	1,940
	--	06:30	2,104
	--	07:30	2,152
	--	08:30	2,104
	--	09:30	2,080
	0	10:30	2,299
	1	11:30	2,526
	2	12:30	2,450
	3	13:30	1,719
	4	14:30	1,872
	5	15:30	2,707
	6	16:30	2,734
	7	17:30	2,707
	8	18:30	2,375
	9	19:30	2,127
	10	20:30	2,151
	11	21:30	2,299
	12	22:30	2,349
	13	23:30	2,299
08-Sep-95	14	00:30	2,274
	15	01:30	2,225
	16	02:30	2,200
	17	03:30	2,200
	18	04:30	2,103
	19	05:30	1,872
	20	06:30	1,917
	21	07:30	1,917
	22	08:30	1,917
	23	09:30	2,127
	24	10:30	1,872
	25	11:30	2,349
	26	12:30	2,707
	27	13:30	2,787
	28	14:30	2,760
	29	15:30	2,707
	--	16:30	2,760
	--	17:30	2,681
	--	18:30	2,760
	--	19:30	2,655
	--	20:30	2,299
	--	21:30	2,127
	--	22:30	2,324
	--	23:30	2,425

Event 2

Date	Elapsed Time	Time	Estimated Flow (cfs)
03-Oct-95	--	01:30	1,356
	--	02:30	1,282
	--	03:30	1,472
	--	04:30	1,452
	--	05:30	1,452
	--	06:30	1,472
	--	07:30	1,512
	--	08:30	3,651
	0	09:30	3,175
	1	10:30	2,577
	2	11:30	2,274
	3	12:30	1,963
	4	13:30	1,613
	5	14:30	1,740
	6	15:30	2,734
	7	16:30	2,526
	8	17:30	2,224
	9	18:30	2,274
	10	19:30	2,324
	11	20:30	2,127
	12	21:30	1,572
	13	22:30	1,282
	14	23:30	1,176
04-Oct-95	15	00:30	1,159
	16	01:30	1,176
	17	02:30	1,282
	18	03:30	1,433
	19	04:30	1,552
	20	05:30	1,552
	21	06:30	1,492
	22	07:30	1,337
	23	08:30	1,176
	24	09:30	1,094
	25	10:30	1,094
	26	11:30	1,109
	27	12:30	1,413
	28	13:30	2,224
	29	14:30	2,249
	30	15:30	2,224
	31	16:30	2,299
	32	17:30	2,400
	33	18:30	2,374
	34	19:30	2,400
	35	20:30	2,400
	--	21:30	2,425
	--	22:30	2,450
	--	23:30	2,450

Note: USGS data is preliminary.

Table 3

General Electric Company
Hudson River Project

River Monitoring Test
Preliminary Sampling

Canoe Carry (CC) Transect - August 24, 1995

	PCB (ng/L)	TSS (mg/L)
CC-1	19	2.5
CC-2	<11	2.5
CC-3	15	2.6
CC-4S	17	3.3
CC-4D	26	2.5
CC-5S	<11	2.6
CC-5D	21	2.6
CC-6	<11	2.6

Notes:

PCB samples analyzed by Method 8080 with a detection limit of 11 ng/L.

Table 4

General Electric Company
Hudson River Project
River Monitoring Test
Total PCB and TSS Results

A. Event I: September 7 and 8, 1995

	Transect Locations											
	CC			004			FED			TIP		
Stations	%Q	PCB (ng/l)	TSS (mg/l)	%Q	PCB (ng/l)	TSS (mg/l)	%Q	PCB (ng/l)	TSS (mg/l)	%Q	PCB (ng/l)	TSS (mg/l)
1S	2	49	2.1	28	47	1.8	20	48 (35)	2.3 (2.0)	9	62	<1.3
1D		50	3.2		33	2.0		39	2.6		86	2.7
2S	2	37	1.4	15	34	2.7	12	36	2.3	6	102	2.3
2D		32	1.2		33 (35)	2.4 (2.4)		36	2.5		94	3.4
3S	3	33	1.3	10	33	3.0	9	47	2.3	19	65	2.4
3D		43	<1.2		32	2.7		58	2.6		71	1.9
4S	17	59	<1.2	12	41	2.8	11	59	3.2	17	63	2.9
4D		87 (77)	1.9 (1.5)		43	3.2		59	2.3		99 (83)	3.2 (4.4)
5S	53	36	<1.3	20	36	2.2	18	57	2.2	14	72	3.0
5D		32	2.2		31	2.2		43	1.9		80	4.0
6S	13	27	1.7	15	35	2.2	30	39	2.3	35	60	3.3
6D		31	<1.3		75	2.3		50	2.0		67	3.9
Transect Mean		43	1.5		40	2.5		47	2.4		76	2.8
	HRM 196.8			-- --			HRM 194.2			HRM 188.5		
PCRDMP		24	1.5		--	--		32	1.3		106	1.8

B. Event 2: October 3 and 4, 1995

	Transect Locations											
	CC			004			FED			TIP		
Stations	%Q	PCB (ng/l)	TSS (mg/l)	%Q	PCB (ng/l)	TSS (mg/l)	%Q	PCB (ng/l)	TSS (mg/l)	%Q	PCB (ng/l)	TSS (mg/l)
1S	2	23 (22)	7.1 (7.1)	28	21	7.6	20	29	4.9	9	86	3.4
1D		25	7.0		24	7.9		27	5.0		104	4.0
2S	2	30	7.2	15	21	7.3	12	28	5.6	6	70	3.2
2D		16	8.2		23	7.5		28	5.8		98	3.5
3S	3	<11	7.3	10	24	6.8	9	22 (24)	5.7 (5.6)	19	50	4.2
3D		21	7.6		36	7.6		25	5.5		93	4.0
4S	17	14	8.1	12	27	7.2	11	19	5.8	17	97	4.5
4D		18	8.8		30 (33)	7.8 (7.5)		34	5.7		62	4.6
5S	53	35	6.8	20	22	7.4	18	21	5.6	14	95	3.8
5D		21	7.6		25	7.2		23	5.4		94 (121)	4.4 (4.7)
6S	13	20	7.3	15	25	7.0	30	34	5.2	35	101	4.5
6D		23	7.9		27	7.3		26	5.6		82	4.6
Transect Mean		21	7.6		26	7.4		26	5.5		89	4.1
	HRM 196.8			-- --			HRM 194.2			HRM 188.5		
PCRDMP		25	5.9		--	--		41	4.2		129	2.4

Notes:

Parentheses ( ) indicate results of PCB and TSS blind duplicate analysis.

Background sample location HRM 197.0 PCB concentration was <11.0 ng/l.

%Q = Approximate percent of total flow for each station calculated as described in Appendix I. Flow rates for surface and deep samples were not calculated separately.

S = Surface

D = Deep

Table 5
General Electric Company
Hudson River Project

River Monitoring Test
Dye Results

A. Event 1: September 7 and 8, 1995

Transect Data (ug/l)

Round	CC1S	CC1D	CC2S	CC2D	CC3S	CC3D	CC4S	CC4D	CC5S	CC5D	CC6S	CC6D
1	0.65	0.62	0.62	0.68	0.69	0.66	0.68	0.78	0.94	0.94	0.89	0.88
2	0.80	0.80	0.82	0.89	0.89	0.91	1.02	1.55 (1.63)	1.72	1.58	1.42	1.71
3	1.12	0.83	0.88	0.86	0.86	0.91	0.83 (0.83)	1.00	0.89	0.89	0.92	0.92
4	0.62 (0.60)	0.62	0.72	0.62	0.68	0.74	0.65	0.69	0.72	0.71	0.74	0.77
5	0.49	0.46	0.55	0.49 (0.57)	0.51	0.49	0.55	0.65	0.75	0.66	0.74	0.77
6	0.49	0.54	0.51	0.71	0.49	0.51	0.54	0.52	0.58	0.60	0.58	0.57
	0041S	0041D	0042S	0042D	0043S	0043D	0044S	0044D	0045S	0045D	0046S	0046D
1	0.71 (0.74)	0.63	0.63	0.66	0.74	0.69	0.73	0.69	0.73	0.74	0.71	0.73
2	0.82	0.77	0.84	0.84	0.92	0.92 (0.88)	0.87	0.85	0.98	0.99	1.01	1.01
3	0.93	0.88	0.96	0.95	0.99	0.99	0.98	0.96	1.01	0.99 (0.95)	1.01	0.95
4	0.68	0.66	0.73	0.76	0.77	0.76	0.79	0.77	0.82	0.81	0.81	1.11
5	0.71	0.57	0.62	0.62	0.63	0.66	0.65	0.65	0.66	0.68	0.68	0.68
6	0.65	0.60	0.58	0.57	0.62	0.63	0.63	0.65	0.63	0.66	0.62 (0.62)	0.63
	FED1S	FED1D	FED2S	FED2D	FED3S	FED3D	FED4S	FED4D	FED5S	FED5D	FED6S	FED6D
1	0.47	0.50	0.59	0.60	0.60	0.67	0.64	0.59	0.56	0.59	0.54	0.56
2	0.87	0.85	1.07	1.07	1.13	1.20	1.12	1.17	1.07	1.06	1.03	1.03
3	0.78	0.82 (0.78)	0.81	0.81	0.78	0.78	0.78	0.78	0.87	0.81	1.07	1.06
4	0.63	0.60	0.63	0.61	0.64	0.60	0.60	0.61	0.63 (0.61)	0.64	0.64	0.64
5	0.54	0.54	0.61	0.56	0.54 (0.63)	0.57	0.57	0.54	0.64	0.60	0.61	0.61
6	0.50	0.47	0.47	0.43	0.49	0.42	0.50	0.40 (0.39)	0.42	0.42	0.47	0.42
	TIP1S	TIP1D	TIP2S	TIP2D	TIP3S	TIP3D	TIP4S	TIP4D	TIP5S	TIP5D	TIP6S	TIP6D
1	0.33	0.33	0.35	0.35	0.50	0.45 (0.46)	0.56	0.50	0.50	0.46	0.48	0.45
2	0.43	0.43	0.45 (0.46)	0.48	0.50	0.54	0.50	0.54	0.58	0.62	0.46	0.52
3	0.52	0.52	0.52	0.54	0.46	0.46	0.50	0.50	0.46	0.46	0.43	0.43
4	0.52 (0.62)	0.54	0.50	0.50	0.39	0.41	0.37	0.39	0.37	0.39	0.33	0.39
5	0.45	0.46	0.39	0.46	0.35	0.29	0.29	0.29	0.29	0.29	0.50	0.31 (0.48)
6	0.39	0.39	0.37	0.45	0.23	0.45	0.29	0.19	0.21	0.21	0.21	0.19

Note: Parentheses ( ) indicate duplicate data.

Key: CC = Canoe Carry FED = Ft Edward
004 = Outfall 004 TIP = Thompson Island Pool

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Table 5
General Electric Company
Hudson River Project

River Monitoring Test
Dye Results

B. Event 2: October 3 and 4, 1995 (Canoe Carry station was not sampled for dye during Event 2)

Transect Data (ug/l)

Round	0041S	0041D	0042S	0042D	0043S	0043D	0044S	0044D	0045S	0045D	0046S	0046D
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.93
2	0.00	0.0 (0.0)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.80	39.60
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0 (0.0)	0.00	0.00	96.60	86.40
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.80	>120*
5	0.00	0.00	0.0 (0.0)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.43
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.4 (0.4)	0.31
	FED1S	FED1D	FED2S	FED2D	FED3S	FED3D	FED4S	FED4D	FED5S	FED5D	FED6S	FED6D
1	0.00	0.01	0.00	0.00	0.01	0.01	0.11	0.20	0.67	1.17	1.49	1.87
2	0.00	0.00	0.00	0.03	0.05	0.07	0.21	0.37	1.33	1.01	2.41	1.97
3	0.00	0.01	0.04	0.0 (0.0)	0.04	0.11	0.27	0.35	1.69	1.63	2.40	2.21
4	0.03	0.00	0.05	0.05	0.11	0.11	0.6 (0.5)	0.47	1.71	2.04	7.92	8.64
5	0.0 (0.0)	0.00	0.00	0.00	0.03	0.03	0.20	0.29	1.09	1.20	1.73	1.84
6	0.01	0.00	0.00	0.00	0.03	0.03	0.12	0.11	0.77	0.7 (0.7)	1.65	1.75
	TIP1S	TIP1D	TIP2S	TIP2D	TIP3S	TIP3D	TIP4S	TIP4D	TIP5S	TIP5D	TIP6S	TIP6D
1	0.18	0.15	0.19	0.18	0.30	0.29	0.37	0.4 (0.3)	0.35	0.34	0.75	0.34
2	0.34	0.33	0.35	0.33	0.52	0.49	0.52	0.50	0.5 (0.6)	0.49	0.45	0.45
3	0.48	0.46	0.49	0.49	0.56	0.59	0.56	0.56	0.56	0.56	0.53	0.53
4	0.6 (0.6)	0.55	0.59	0.59	0.59	0.57	0.56	0.55	0.57	0.55	0.53	0.55
5	0.52	0.55	0.57	0.56	0.55	0.55	0.50	0.52	0.52	0.50	0.49	0.75
6	0.60	0.59	0.60	0.6 (0.6)	0.55	0.55	0.50	0.50	0.52	0.52	0.49	0.49

Notes: Parentheses ( ) indicate duplicate data.
* = Result is greater than 120 ug/l, which is the upper range of the laboratory fluorometer.

Key: CC = Canoe Carry; 004 = Outfall 004; FED = Ft Edward; TIP = Thompson Island Pool

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Table 6

General Electric Company
Hudson River Project

River Monitoring Test
PCB mass transport data (kg/day)

	Event 1:				Event 2:			
	CC	004	FED	TIP	CC	004	FED	TIP
A1	0.005	0.066	0.051	0.038	0.002	0.034	0.029	0.044
A2	0.004	0.029	0.026	0.035	0.003	0.017	0.018	0.027
A3	0.006	0.020	0.029	0.076	0.002	0.016	0.012	0.073
A4	0.074	0.031	0.037	0.081	0.014	0.019	0.015	0.072
A5	0.127	0.040	0.053	0.060	0.094	0.025	0.021	0.072
A6	0.022	0.048	0.080	0.133	0.015	0.020	0.048	0.172
Total	0.24	0.23	0.28	0.42	0.13	0.13	0.14	0.46

Notes:

PCB mass for each station based on average concentration of surface and deep samples.
Average flows for Events 1 and 2 were 2,400 and 2,160 cfs, respectively.
Details of mass balance calculations presented in Appendix I.

Table 7
General Electric Company
Hudson River Project River Monitoring Test

PCB Homolog Distributions (1)

Date Collected	Location (2)	Comments	Flow (3) (cfs)	TSS (mg/l)	Total PCB (ng/l)	Homolog Distribution (weight percent)							
						Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
07-Sep-95	BACKGROUND	U	2,330	<1	<11	-	-	-	-	-	-	-	-
	HRM 197.0	PCRDMP,P	2,150	1	13	0.0	22.3	34.1	31.5	9.8	2.3	0.0	0.0
07-Sep-95	CC 1S	-	2,330	2	49	0.0	11.9	42.2	40.7	3.9	1.3	0.0	0.0
	CC 1D	-	2,330	3	50	0.0	8.7	37.2	42.2	8.4	3.4	0.0	0.0
	CC 2S	P	2,330	1	37	0.0	12.2	42.6	36.0	7.2	2.0	0.0	0.0
	CC 2D	P	2,330	1	32	0.0	11.8	43.4	35.4	7.5	1.9	0.0	0.0
	CC 3S	P	2,330	1	33	0.0	15.5	42.4	34.2	6.5	1.5	0.0	0.0
	CC 3D	P	2,330	<1	43	0.0	13.2	39.8	37.7	8.3	1.1	0.0	0.0
	CC 4S	-	2,330	<1	59	0.0	5.8	33.3	47.4	10.8	2.7	0.0	0.0
	CC 4D	-	2,330	2	87	0.0	11.5	44.1	37.2	6.5	0.7	0.0	0.0
	CC 5S	P	2,330	<1	36	0.0	7.4	41.9	41.5	7.9	1.3	0.0	0.0
	CC 5D	P	2,330	2	32	0.0	14.7	39.2	35.1	9.9	1.2	0.0	0.0
	CC 6S	P	2,330	2	27	0.0	15.1	37.7	35.4	9.3	2.4	0.0	0.0
	CC 6D	P	2,330	<1	31	0.0	22.5	35.6	35.7	5.7	0.5	0.0	0.0
	CC 4D	Dup	2,330	—	77	0.0	8.1	39.8	42.1	9.1	1.0	0.0	0.0
07-Sep-95	HRM 196.8	PCRDMP,P	2,150	2	24	0.0	16.1	41.0	31.8	8.9	2.2	0.0	0.0
07-Sep-95	004 1S	-	2,330	2	48	0.0	11.1	42.0	38.1	7.7	1.2	0.0	0.0
	004 1D	P	2,330	2	33	0.0	16.1	41.8	29.6	10.7	1.8	0.0	0.0
	004 2S	P	2,330	3	34	0.0	11.4	44.8	34.0	9.1	0.7	0.0	0.0
	004 2D	P	2,330	2	33	0.0	13.8	42.4	33.6	8.6	1.6	0.0	0.0
	004 3S	P	2,330	3	33	0.0	10.9	43.5	35.1	9.0	1.6	0.0	0.0
	004 3D	P	2,330	3	32	0.0	12.6	42.4	34.8	9.4	0.7	0.0	0.0
	004 4S	P	2,330	3	41	0.0	13.5	39.5	37.4	7.9	1.6	0.0	0.0
	004 4D	P	2,330	3	43	0.0	9.3	44.8	36.5	7.8	1.6	0.0	0.0
	004 5S	P	2,330	2	36	0.0	9.5	43.8	37.6	8.0	1.2	0.0	0.0
	004 5D	P	2,330	2	31	0.0	12.2	43.4	37.2	6.8	0.5	0.0	0.0
	004 6S	P	2,330	2	35	0.0	14.0	40.7	37.8	6.5	1.1	0.0	0.0
	004 6D	-	2,330	2	76	0.0	12.9	46.6	34.6	5.1	0.7	0.0	0.0
	004 2D	Dup	2,330	—	35	0.0	11.0	38.5	40.8	7.0	2.8	0.0	0.0

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Table 7
General Electric Company
Hudson River Project River Monitoring Test

PCB Homolog Distributions (1)

Date Collected	Location (2)	Comments	Flow (3) (cfs)	TSS (mg/l)	Total PCB (ng/l)	Homolog Distribution (weight percent)							
						Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
07-Sep-95	FED 1S	-	2,330	2	48	0.0	10.0	42.3	39.2	7.5	1.0	0.0	0.0
	FED 1D	P	2,330	3	39	0.0	10.1	37.2	42.0	9.0	1.7	0.0	0.0
	FED 2S	P	2,330	2	36	0.0	11.8	41.9	36.4	8.7	1.2	0.0	0.0
	FED 2D	P	2,330	3	36	0.0	7.0	38.3	42.2	9.9	2.6	0.0	0.0
	FED 3S	-	2,330	2	47	0.0	11.1	42.8	38.7	6.3	1.1	0.0	0.0
	FED 3D	-	2,330	3	58	0.0	11.9	42.0	38.4	6.8	1.1	0.0	0.0
	FED 4S	-	2,330	3	59	0.0	6.2	40.5	44.5	7.8	0.9	0.0	0.0
	FED 4D	-	2,330	2	59	0.0	9.8	42.8	35.7	9.2	2.6	0.0	0.0
	FED 5S	-	2,330	2	57	0.0	10.6	37.4	38.2	11.3	2.6	0.0	0.0
	FED 5D	P	2,330	2	43	0.0	8.0	36.7	37.3	14.0	4.0	0.0	0.0
	FED 6S	P	2,330	2	39	0.0	9.7	42.3	41.5	5.5	0.9	0.0	0.0
	FED 6D	-	2,330	2	50	0.0	9.5	42.2	41.1	6.5	0.8	0.0	0.0
	FED 1S	Dup,P	2,330	---	35	0.0	12.6	46.6	33.3	6.5	1.2	0.0	0.0
	HRM 194.2	PCRDMP,P	2,150	1	32	0.0	14.0	39.6	36.3	8.1	2.0	0.0	0.0
07-Sep-95	TIP 1S	-	2,330	<1	62	5.6	16.5	41.9	29.7	5.5	0.9	0.0	0.0
	TIP 1D	-	2,330	3	86	8.2	17.7	37.3	31.7	4.5	0.5	0.0	0.0
	TIP 2S	-	2,330	2	102	4.5	16.0	36.6	36.5	5.7	0.7	0.0	0.0
	TIP 2D	-	2,330	3	94	0.0	17.8	41.8	33.0	6.6	0.8	0.0	0.0
	TIP 3S	-	2,330	2	65	2.0	16.1	37.6	38.1	5.4	0.8	0.0	0.0
	TIP 3D	-	2,330	2	71	3.8	16.8	39.6	32.7	6.2	0.9	0.0	0.0
	TIP 4S	-	2,330	3	63	0.0	12.9	40.9	37.4	7.5	1.4	0.0	0.0
	TIP 4D	-	2,330	3	99	2.0	16.3	39.6	35.1	6.1	1.0	0.0	0.0
	TIP 5S	-	2,330	3	72	5.3	15.1	38.3	33.6	6.2	1.6	0.0	0.0
	TIP 5D	-	2,330	4	80	6.4	16.2	37.0	31.5	6.4	2.4	0.0	0.0
	TIP 6S	-	2,330	3	60	1.8	12.6	42.2	36.3	5.8	1.3	0.0	0.0
	TIP 6D	-	2,330	4	67	1.7	16.2	40.4	35.5	5.2	1.0	0.0	0.0
	TIP 4D	Dup	2,330	---	83	6.7	15.4	38.5	31.8	6.7	1.0	0.0	0.0
	HRM 188.5	PCRDMP	2,150	2	106	7.4	21.2	37.6	26.6	5.8	1.5	0.0	0.0

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Table 7
General Electric Company
Hudson River Project River Monitoring Test

PCB Homolog Distributions (1)

Date Collected	Location (2)	Comments	Flow (3) (cfs)	TSS (mg/l)	Total PCB (ng/l)	Homolog Distribution (weight percent)							
						Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
03-Oct-95	BACKGROUND S	U	2,105	2	<11	-	-	-	-	-	-	-	-
	BACKGROUND D	U	2,105	2	<11	-	-	-	-	-	-	-	-
	HRM 197.0	PCRDMP,P	1,895	2	23	0.0	24.3	29.5	34.4	9.9	1.9	0.0	0.0
03-Oct-95	CC 1S	P	2,105	7	23	0.0	19.8	44.0	27.1	7.5	1.7	0.0	0.0
	CC 1D	P	2,105	7	25	0.0	17.4	41.0	31.8	8.2	1.6	0.0	0.0
	CC 2S	P	2,105	7	30	0.0	15.7	39.2	35.0	8.3	1.8	0.0	0.0
	CC 2D	P	2,105	8	16	0.0	9.8	39.9	36.8	11.6	1.9	0.0	0.0
	CC 3S	U	2,105	7	<11	-	-	-	-	-	-	-	-
	CC 3D	P	2,105	8	21	0.0	14.7	37.1	33.6	12.6	2.0	0.0	0.0
	CC 4S	P	2,105	8	14	0.0	11.0	34.8	39.8	12.0	2.4	0.0	0.0
	CC 4D	P	2,105	9	18	0.0	11.3	45.7	31.9	9.5	1.6	0.0	0.0
	CC 5S	P	2,105	7	35	0.0	12.8	45.7	32.9	7.3	1.4	0.0	0.0
	CC 5D	P	2,105	8	21	0.0	10.0	41.3	35.5	11.4	1.9	0.0	0.0
	CC 6S	P	2,105	7	20	0.0	10.3	43.8	34.8	8.9	2.3	0.0	0.0
	CC 6D	P	2,105	8	23	0.0	16.1	41.1	32.7	8.2	1.9	0.0	0.0
	CC 1S	Dup,P	2,105	7	23	0.0	17.5	44.0	29.4	7.3	1.8	0.0	0.0
03-Oct-95	HRM 196.8	PCRDMP,P	1,895	6	25	0.0	15.1	42.5	34.3	6.9	1.2	0.0	0.0
03-Oct-95	004 1S	P	2,105	8	21	0.0	11.9	40.9	37.7	7.2	2.3	0.0	0.0
	004 1D	P	2,105	8	24	0.0	15.6	44.7	31.1	6.8	1.9	0.0	0.0
	004 2S	P	2,105	7	21	0.0	13.1	41.9	36.7	6.1	2.2	0.0	0.0
	004 2D	P	2,105	8	24	0.0	9.3	39.4	41.7	7.2	2.4	0.0	0.0
	004 3S	P	2,105	7	24	0.0	13.8	43.0	33.9	7.4	2.0	0.0	0.0
	004 3D	P	2,105	8	36	0.0	17.5	40.6	35.8	5.2	1.0	0.0	0.0
	004 4S	P	2,105	7	27	0.0	14.4	34.7	32.2	12.8	5.9	0.0	0.0
	004 4D	P	2,105	8	30	0.0	12.5	40.0	37.7	8.4	1.4	0.0	0.0
	004 5S	P	2,105	7	22	0.0	11.9	39.4	38.7	7.7	2.3	0.0	0.0
	004 5D	P	2,105	7	25	0.0	10.9	38.9	39.9	8.8	1.6	0.0	0.0
	004 6S	P	2,105	7	25	0.0	12.7	40.7	37.4	7.3	1.9	0.0	0.0
	004 6D	P	2,105	7	27	0.0	13.7	39.9	34.7	9.6	2.1	0.0	0.0
	004 4D	Dup,P	2,105	8	33	0.0	9.5	47.9	31.8	8.2	2.7	0.0	0.0

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Table 7
General Electric Company
Hudson River Project River Monitoring Test

PCB Homolog Distributions (1)

Date Collected	Location (2)	Comments	Flow (3) (cfs)	TSS (mg/l)	Total PCB (ng/l)	Homolog Distribution (weight percent)							
						Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
03-Oct-95	FED 1S	P	2,105	5	29	0.0	5.8	39.3	43.6	9.0	2.4	0.0	0.0
	FED 1D	P	2,105	5	28	0.0	10.9	45.6	34.0	8.0	1.5	0.0	0.0
	FED 2S	P	2,105	6	28	0.0	8.5	39.8	36.2	12.1	3.5	0.0	0.0
	FED 2D	P	2,105	6	28	0.0	10.0	43.9	34.4	9.8	1.9	0.0	0.0
	FED 3S	P	2,105	6	22	0.0	14.2	41.2	35.0	7.5	2.2	0.0	0.0
	FED 3D	P	2,105	6	25	0.0	10.8	40.9	37.3	9.2	1.8	0.0	0.0
	FED 4S	P	2,105	6	19	0.0	9.7	41.0	38.0	9.1	2.1	0.0	0.0
	FED 4D	P	2,105	6	34	0.0	8.2	23.3	27.7	15.8	18.8	6.2	0.0
	FED 5S	P	2,105	6	21	0.0	11.0	42.3	33.6	10.6	2.5	0.0	0.0
	FED 5D	P	2,105	5	23	0.0	12.6	37.7	35.6	12.1	2.1	0.0	0.0
	FED 6S	P	2,105	5	34	0.0	9.5	34.3	45.1	9.1	2.1	0.0	0.0
	FED 6D	P	2,105	6	26	0.0	13.8	33.3	41.6	8.9	2.5	0.0	0.0
	FED 3S	Dup,P	2,105	6	24	0.0	11.3	43.3	35.0	8.3	2.2	0.0	0.0
	HRM 194.2	PCRDMP,P	1,895	4	41	0.0	14.7	38.8	36.1	8.2	2.3	0.0	0.0
03-Oct-95	TIP 1S	-	2,105	3	86	9.8	17.4	35.8	28.9	6.6	1.6	0.0	0.0
	TIP 1D	-	2,105	4	104	13.6	20.0	33.5	26.4	5.0	1.4	0.0	0.0
	TIP 2S	-	2,105	3	70	3.6	17.3	39.7	30.1	7.5	1.8	0.0	0.0
	TIP 2D	-	2,105	4	98	9.5	22.7	36.3	24.2	5.8	1.5	0.0	0.0
	TIP 3S	-	2,105	4	50	5.3	5.7	37.5	39.7	8.8	3.0	0.0	0.0
	TIP 3D	-	2,105	4	93	9.1	22.7	34.3	27.3	5.4	1.3	0.0	0.0
	TIP 4S	-	2,105	5	97	11.7	22.1	32.4	26.8	5.5	1.5	0.0	0.0
	TIP 4D	-	2,105	5	62	7.4	11.3	37.1	33.7	8.4	2.2	0.0	0.0
	TIP 5S	-	2,105	4	95	13.2	20.3	34.6	25.9	4.4	1.6	0.0	0.0
	TIP 5D	-	2,105	4	94	9.8	22.2	34.4	26.0	6.0	1.6	0.0	0.0
	TIP 6S	-	2,105	5	101	14.4	21.7	32.3	24.7	5.5	1.5	0.0	0.0
	TIP 6D	-	2,105	5	82	7.6	18.0	35.4	29.1	8.2	1.8	0.0	0.0
	TIP 5D	Dup	2,105	5	121	6.3	18.5	30.7	27.2	10.6	6.7	0.0	0.0
	HRM 188.5	PCRDMP	1,895	2	129	13.6	22.3	35.1	23.6	4.9	0.5	0.0	0.0

Notes:

(1) Samples analyzed for PCBs by capillary column using NEA Method 608CAP.

(2) Background sample taken at HRM 197.0. CC = Canoe Carry, 004 = Outfall 004, FED = Fort Edward, and TIP = Thompson Island Pool. S = surface sample, D = Deep sample.

(3) For transect sampling events, flow is presented as mean flow for the six hour sampling period at the Fort Edward gauging station for each sampling event. For PCRDMP data, flow is presented as mean daily flow. Calculated flows for both the transect and PCRDMP sampling are based on the average of flow data collected at 15 minute intervals. Data provided by USGS (preliminary drafts 9/15/95 and 11/08/95).

HRM = Approximate Hudson River mile; HRM 0.0 is located at the Battery in New York City.

Dup = Duplicate sample.

PCRDMP = Results of Post Construction Remnant Deposit Monitoring Program performed on same day as transect sampling.

U = Data qualified as undetected. Concentration below detection limit.

P = Practical quantitation limit (PQL) note for PCB values between <11 and 44 ng/l.

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Table 8
General Electric Company
Hudson River Project River Monitoring Test

Post-Construction Remnant Deposit Monitoring Program
September 7 and October 3, 1995 Water Column PCB Monitoring Results (1)

Date Collected	Location (2)	Comments	Flow (3) (cfs)	TSS (mg/l)	Total PCB (ng/l)	Homolog Distribution (weight percent)							
						Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
07-Sep-95	HRM-197.0	P	2,150	1.2	13	0.0	22.6	33.0	31.7	10.5	2.2	0.0	0.0
	HRM-196.8	P		1.5	24	0.0	16.1	41.0	31.8	8.9	2.2	0.0	0.0
	HRM-194.2	P		1.3	32	0.0	14.0	39.6	36.3	8.1	2.0	0.0	0.0
	HRM-188.5	-		1.8	106	7.4	21.2	37.6	26.6	5.8	1.5	0.0	0.0
	HRM-197.0	BD,P		1.3	13	0.0	22.3	34.0	31.5	9.8	2.3	0.0	0.0
03-Oct-95	HRM-197.0	P	1,895	1.9	23	0.0	24.3	29.5	34.4	9.9	1.9	0.0	0.0
	HRM-196.8	P		5.9	25	0.0	15.1	42.5	34.3	6.9	1.2	0.0	0.0
	HRM-194.2	P		4.2	41	0.0	14.7	38.8	36.1	8.2	2.3	0.0	0.0
	HRM-188.5	-		2.4	129	13.6	22.3	25.1	23.6	4.9	0.5	0.0	0.0

Notes: (1) Samples analyzed for PCBs by capillary column using NEA Method 608CAP.
(2) HRM = Approximate Hudson River mile; HRM 0.0 is located at the Battery in New York City.
Samples from location HRM 194.2 are a composite of west and east channels.
(3) Flow is presented as mean daily flow from preliminary data provided by USGS (09/15/95 and 11/08/95) at Fort Edward gauging station.
BD = Blind Duplicate - a field PCB duplicate sample submitted to the laboratory without identification of field location.
P = Practical quantitation limit (PQL) note for PCB values between <11 and 44 ng/l.

Table 9

General Electric Company
Hudson River Project

River Monitoring Test
PCB QA/QC Data

A. Event 1: PCB QA/QC Data

Transect	MS Recovery	Duplicate				EqBlk
		Location	Original	Duplicate	RPD	
CC	--	4D	87	77	12%	<11
004	99%	2D	33	35	6%	43
FED	--	1S	48	35	31%	<11
TIP	96%	4D	99	83	18%	<11
PCRDMP	102%	HRM 197.0	13	13	0%	<11

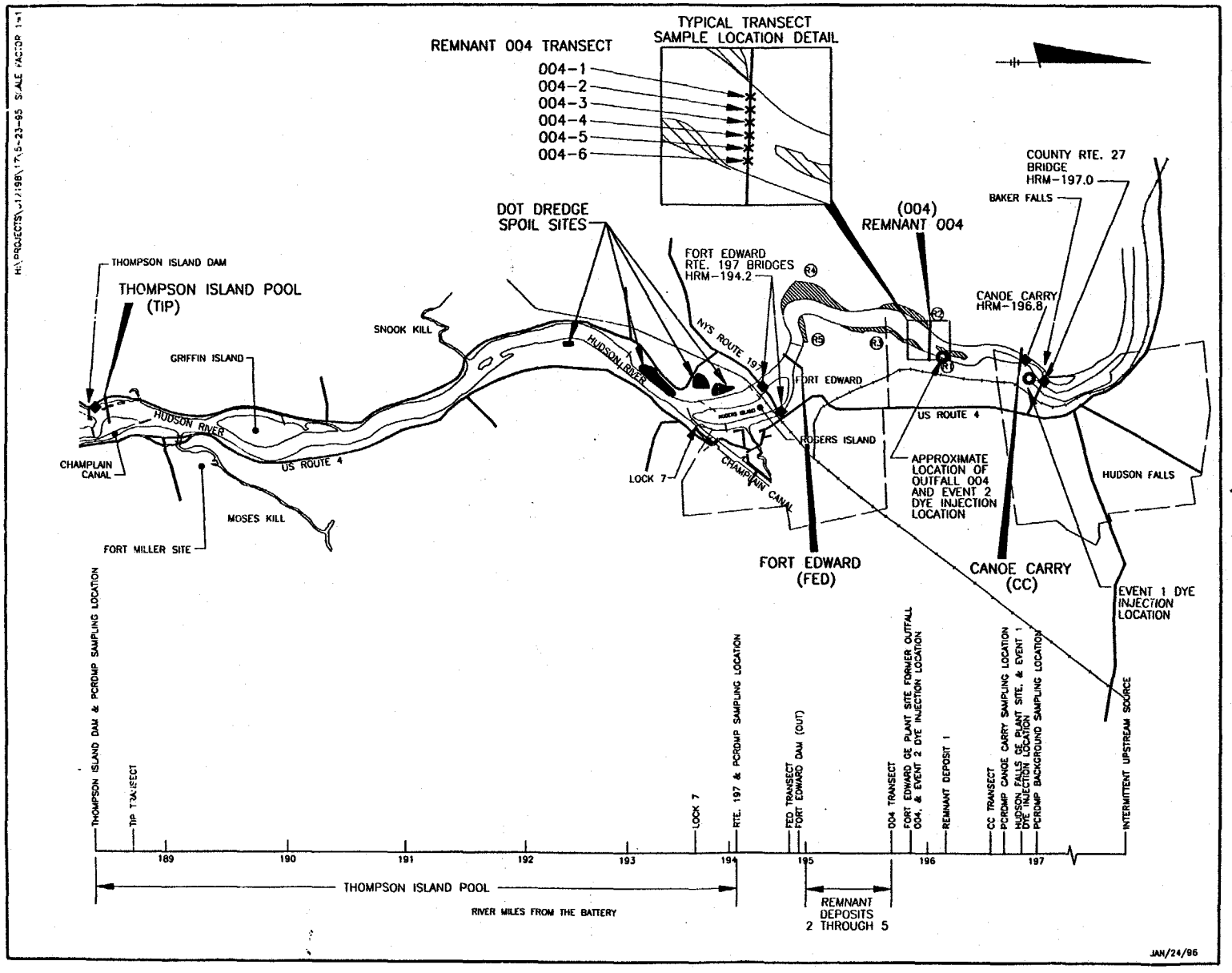
B. Event 2: PCB QA/QC Data

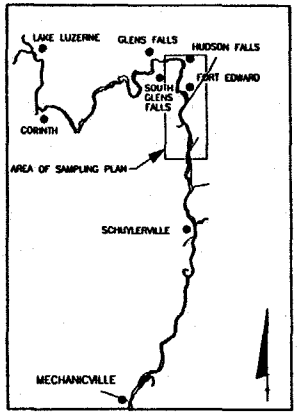
Transect	MS Recovery	Duplicate				EqBlk
		Location	Original	Duplicate	RPD	
CC	--	1S	23	23	0%	<11
004	91%	4D	30	33	10%	65
FED	98%	3S	22	24	9%	<11
TIP	92%	5D	94	121	25%	<11
PCRDMP	94%	--	--	--	--	<11

Notes: PCB concentrations in ng/L

Figures

FIGURE 1





◆ ROUTINE PCRDMP SAMPLING LOCATION

TRANSECT SAMPLING LOCATION

X TRANSECT SAMPLING STATION

R1 REMNANT AREA

(CC) SAMPLE LOCATION IDENTIFICATION

DYE INJECTION LOCATION

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
RIVER MONITORING TEST

WATER COLUMN TRANSECT SAMPLING LOCATIONS

4000 0 4000

APPROX. SCALE IN FEET

612.198-10F

O'BRIEN & GERE ENGINEERS, INC.

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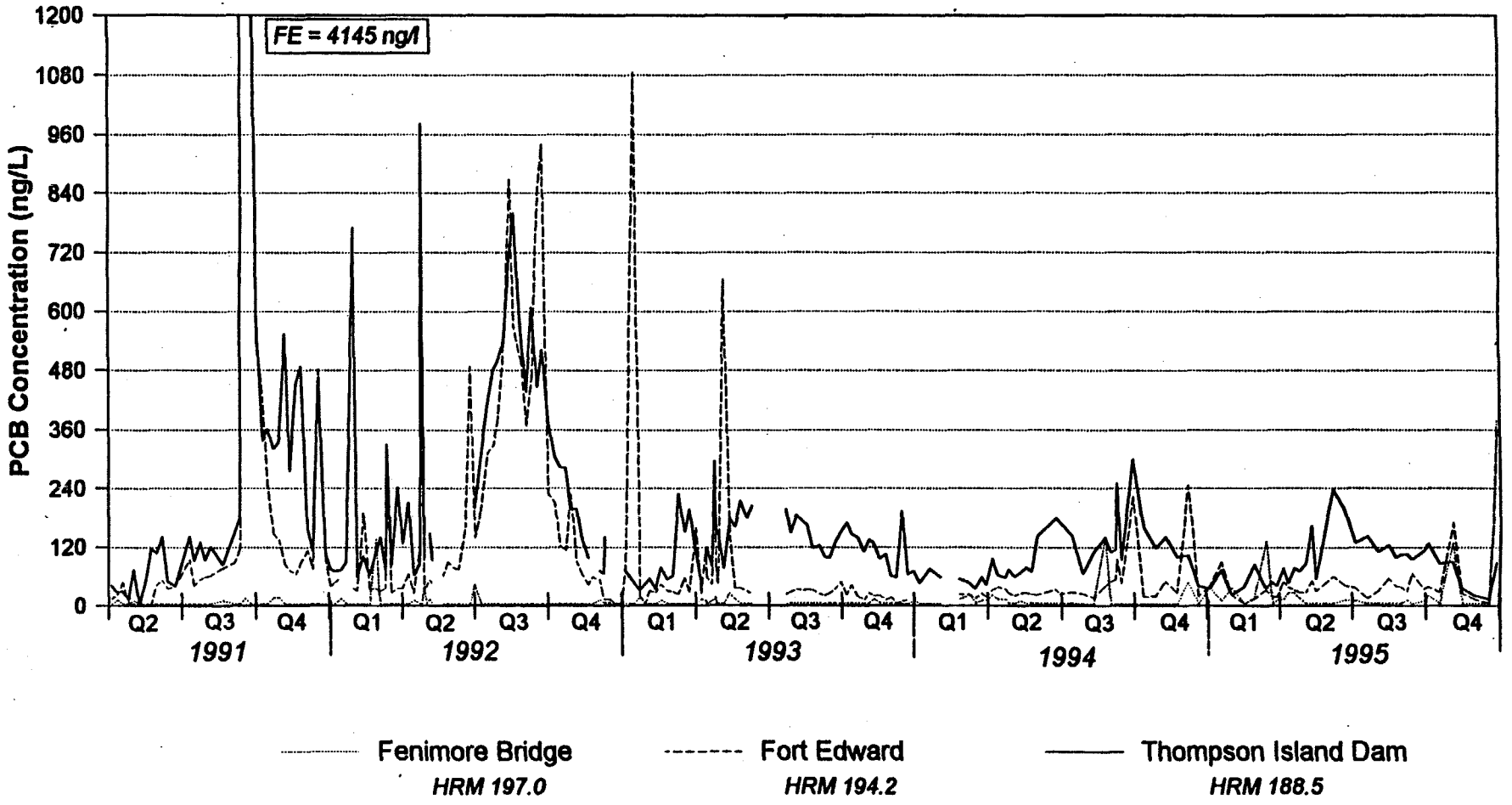
Figure 2
General Electric Company
Hudson River Project Monitoring Test
Post-Construction Remnant Deposit Monitoring
1991 to 1995 Water Column Monitoring Results



O'Brien & Gere Engineers, Inc.
January 25, 1996
I:612187.dat.pcbvst3.mrfig

*MDL = 11 ng/l. PQL = 44 ng/l. Q = yearly quarter.

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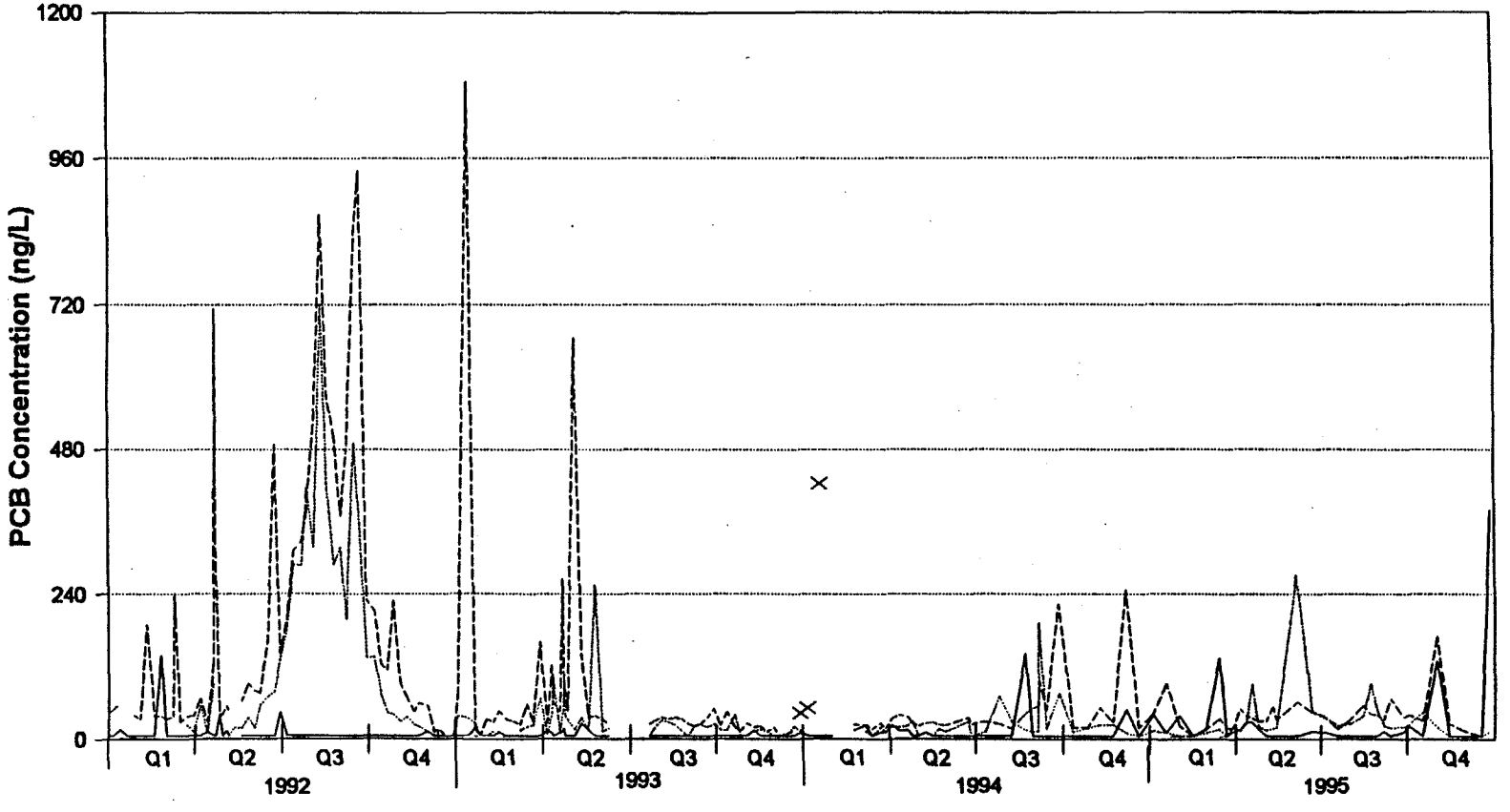
Figure 3
General Electric Company
Hudson River Project Monitoring Test
Post-Construction Remnant Deposit Monitoring
1992-1995 Water Column Monitoring Results



O'Brien & Gere Engineers, Inc.9, 1996
January 25, 1996
I:div52.0612187.dat.bpcbvst3.wb2;mrfig2

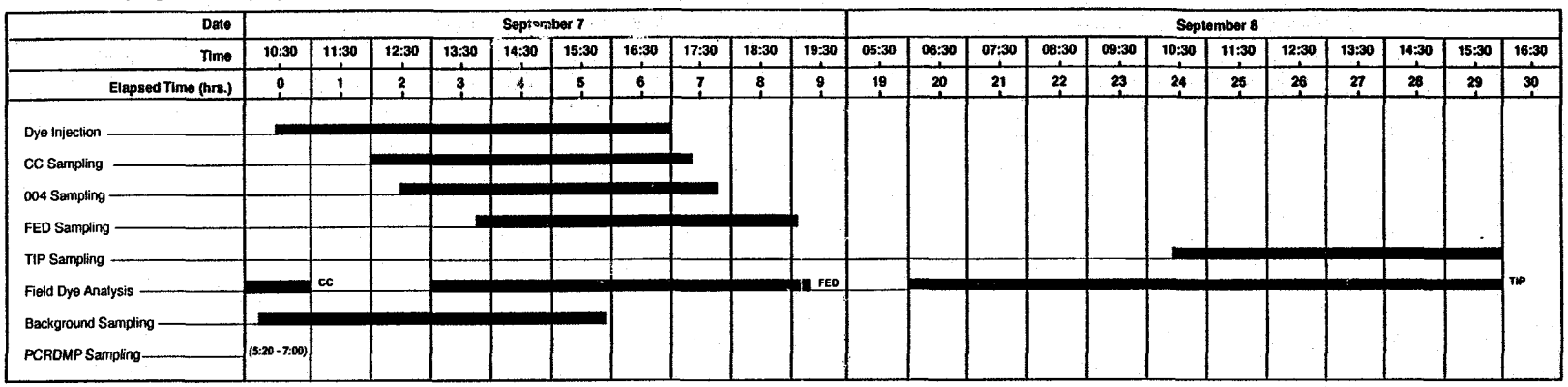
Note: *Symbol (X) indicates sample collected from eastern shoreline at HRM 194.2, due to ice cover on the river.

MDL = 11 ng/l. PQL = 44 ng/l. Q = Yearly quarter.

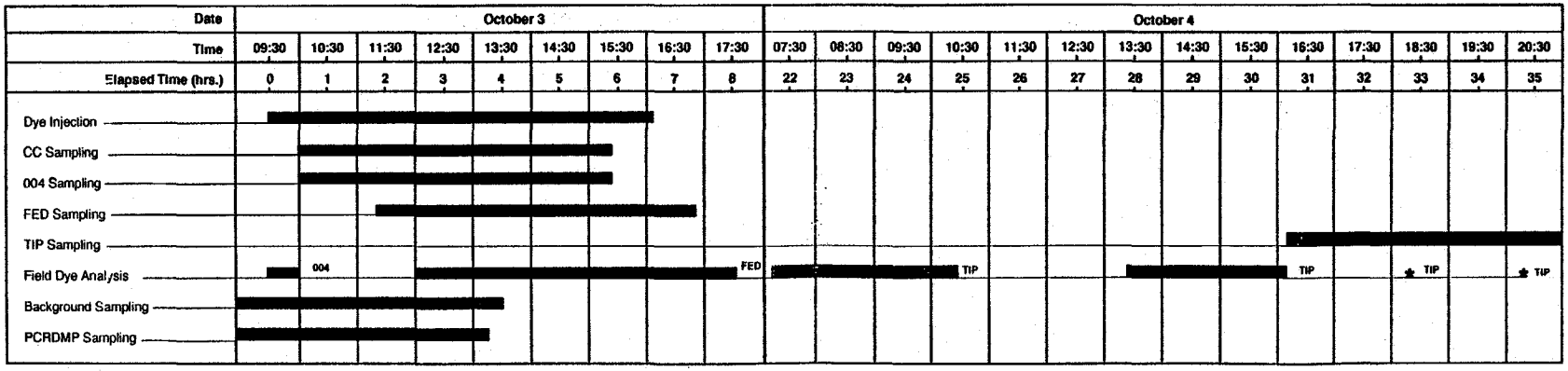
Figure 4

Hudson River Project
1995 River Monitoring Test
Events 1 and 2 Sampling Schedule
General Electric Company

A. Event 1 Sampling Schedule (September 7 and 8, 1995)



B. Event 2 Sampling Schedule (October 3 and 4, 1995)



O'Brien & Gere Engineers, Inc.

Note: Background samples were collected from County Route 27 Bridge in Hudson Falls.

B338A.Fh/clm/012296

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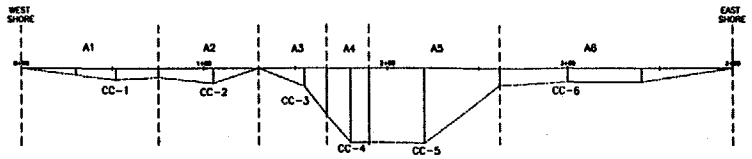
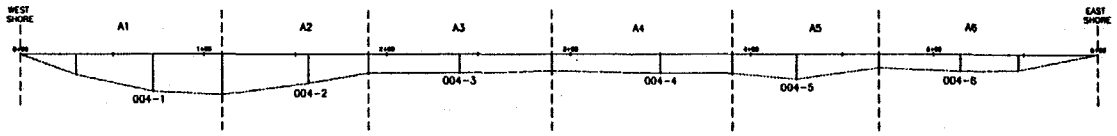
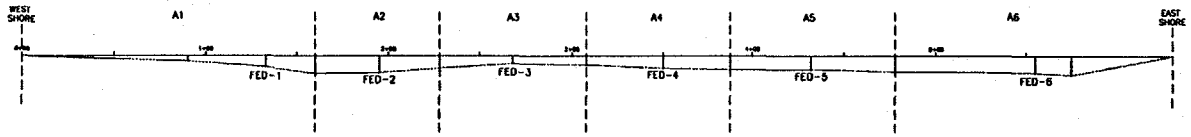


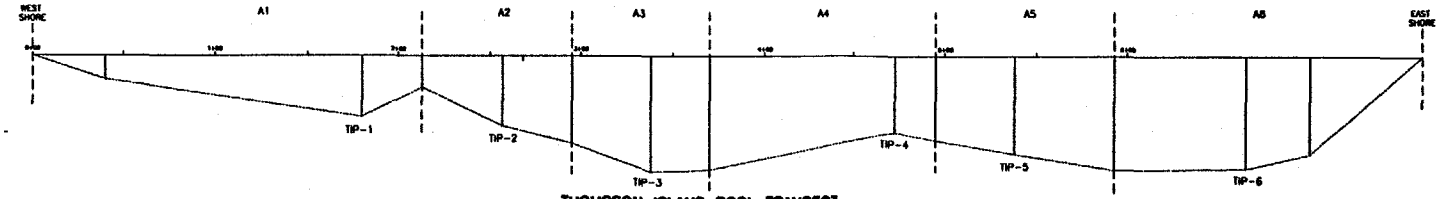
CANOE CARRY TRANSECT



004 TRANSECT



FORT EDWARD TRANSECT



THOMPSON ISLAND POOL TRANSECT

It is a violation of law for any person unless he is acting under the direction of a licensed professional engineer to alter this document.

This drawing was prepared at the scale indicated in the title block. Inaccuracies in the stated scale may be introduced when drawings are reproduced by any means. Use the graphic scale bar in the title block to determine the actual scale of this drawing.

In charge of JKF
Designed by MDL Checked by WAA
Drawn by DRF

HORIZ. 1"=30' 30 0 30 60
VERT. 1"=5' 5 0 5 10

NO.	DATE	REVISION	INIT.

O'BRIEN & GERE ENGINEERS, INC.

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
1995 RIVER MONITORING TEST

GENERAL
HUDSON FALLS, NEW YORK
BATHYMETRIC PROFILES OF TRANSECTS

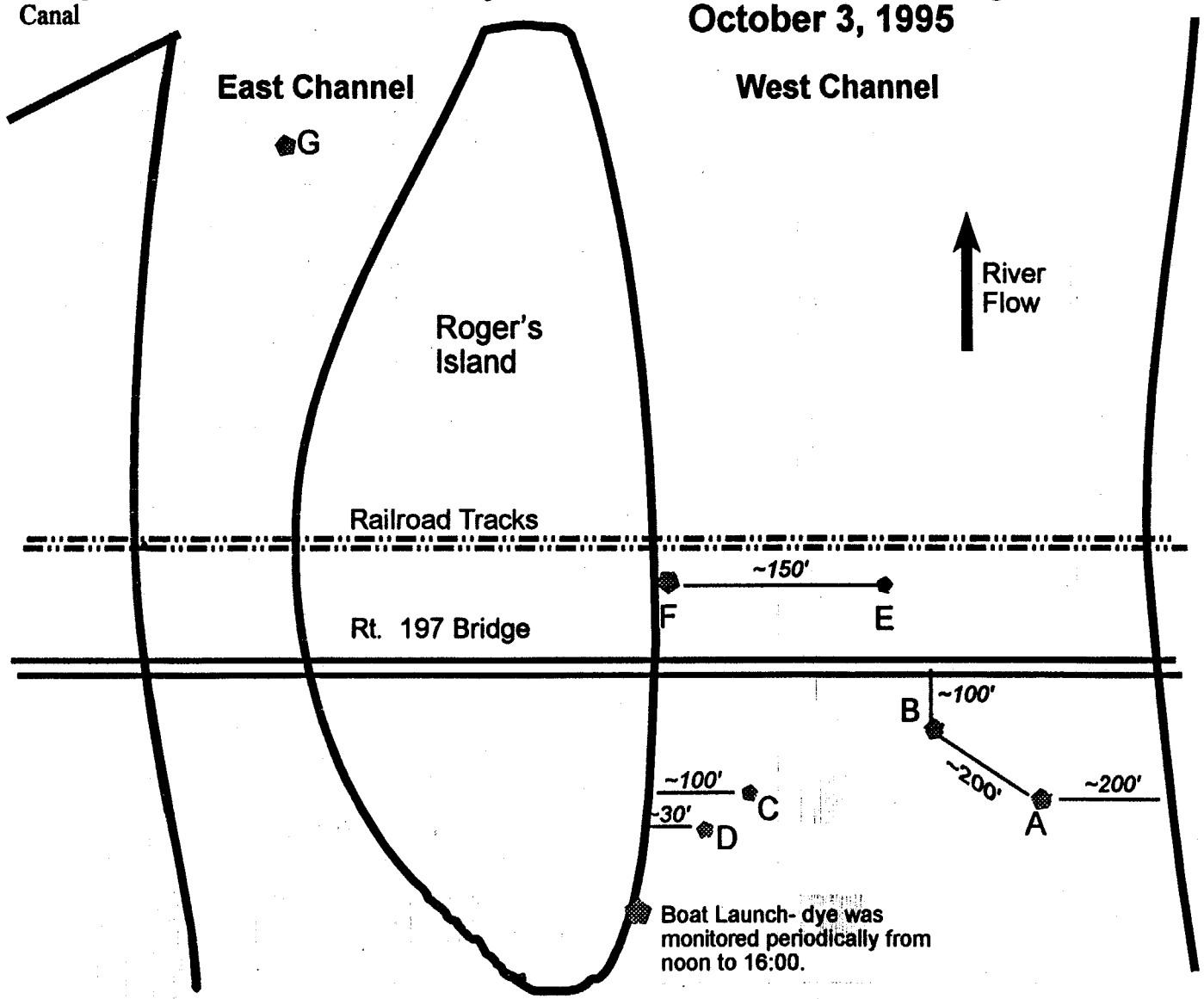
FILE NO. 812.198-752F
DATE JAN. 17, 1996
5
R-0

DRF H:\DIVISION\ES\JAR\CAD\ELDNG

DESC

320936

Figure 6
General Electric Company
Hudson River Project River Monitoring Test
Dye Concentrations around Roger's Island
October 3, 1995



Dye concentrations:

Location	Conc. (ppb)	Time
A	ND	16:58
B	ND	17:00
C	0.4	17:02
D	1.5	17:04
E	ND	17:08
F	1.86	17:13
G	4.0	17:23
Launch	2-3	12:00-16:00

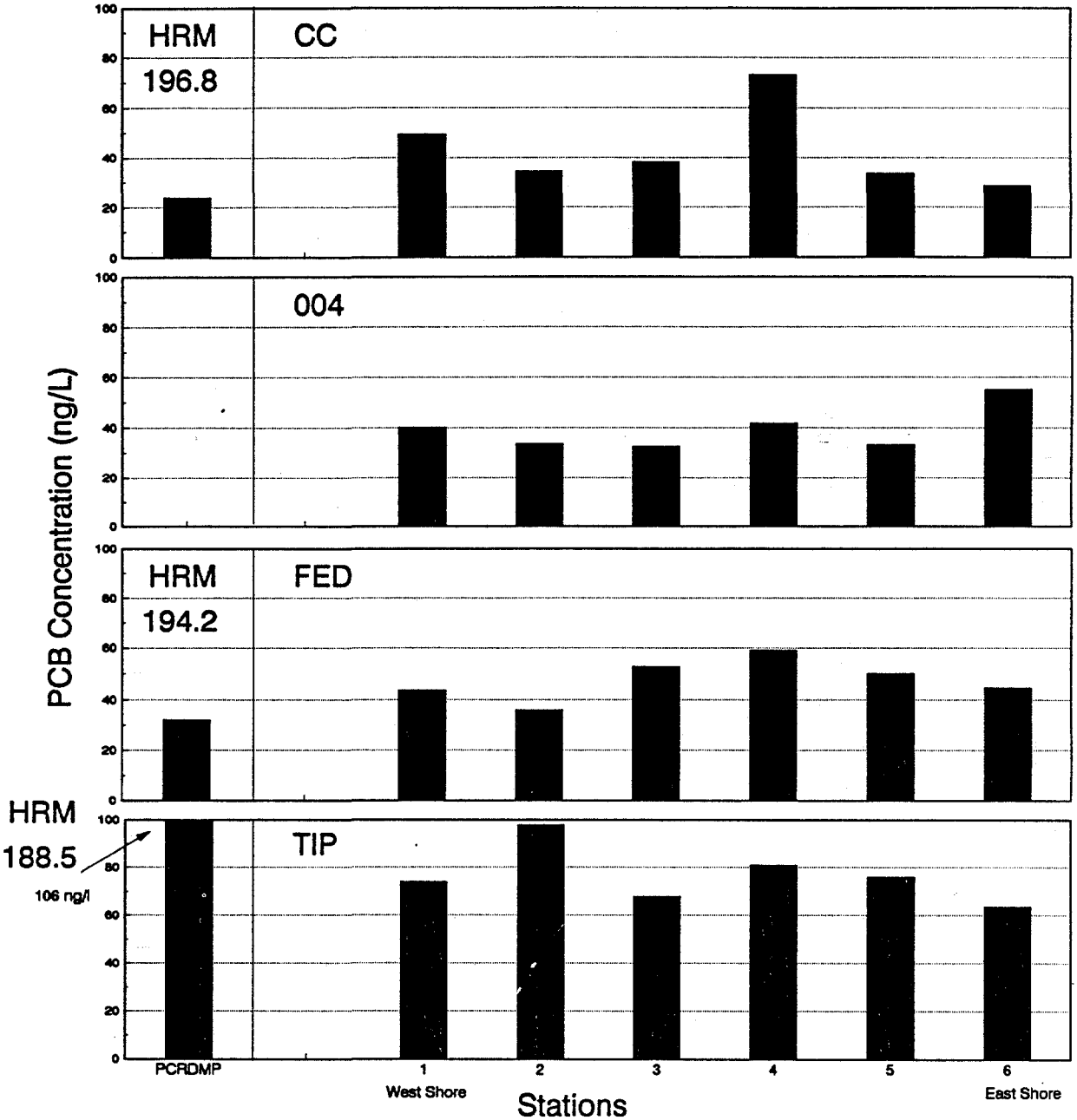
N

Not to scale

O'Brien & Gere Engineers, Inc.
December 18, 1995
44hvisldye1.wmg

320937

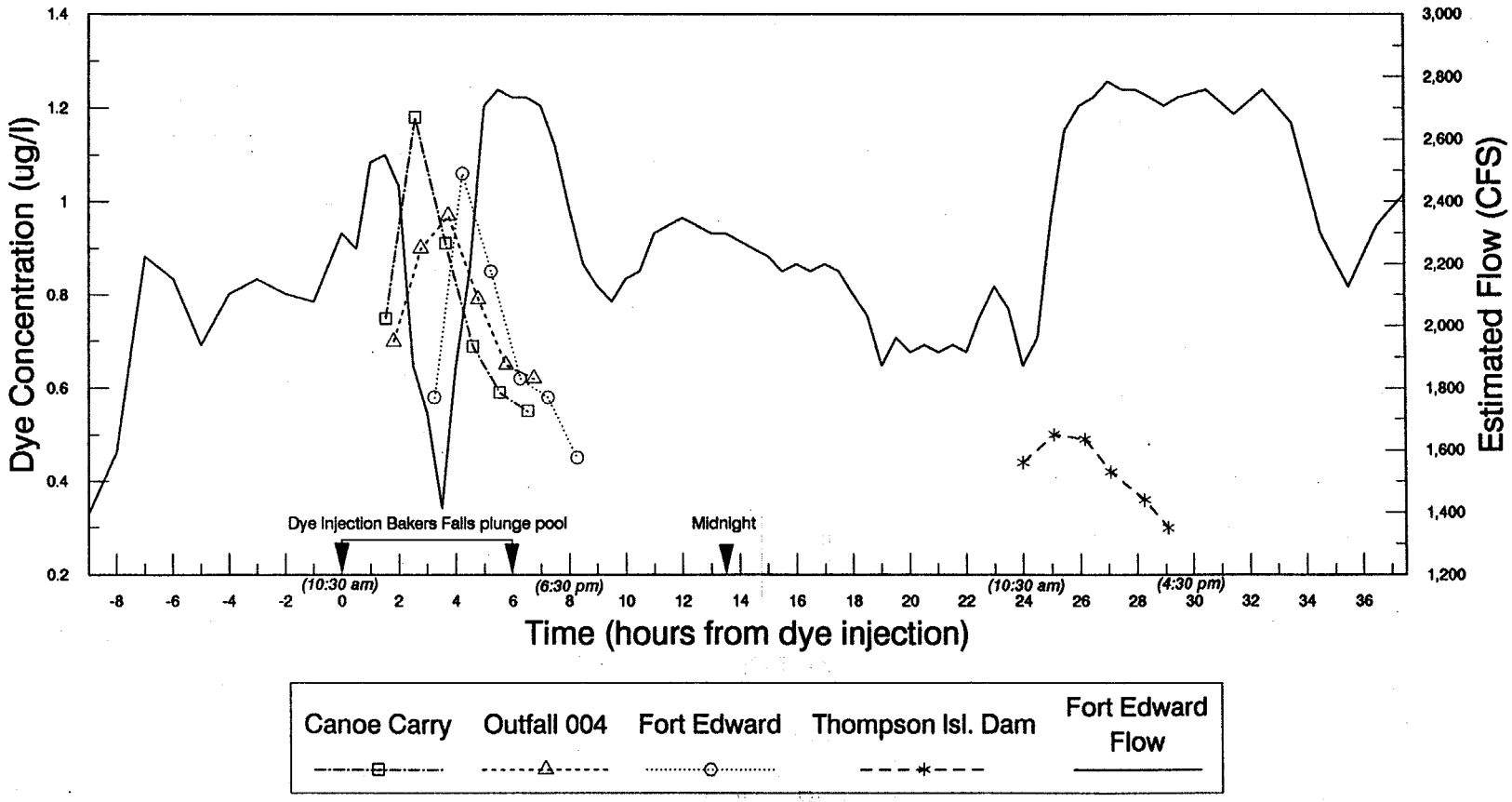
Figure 7
General Electric Company
Hudson River Project River Monitoring
Event 1 Total PCB Data



O'Brien and Gere Engineers, Inc.
December 20, 1995
b44a:gepcbf7.drw

Notes: For transect samples, total PCB concentrations presented are averages of surface and deep samples at each station.
Results of Post Construction Remnant Deposit Monitoring Program (PCRDMP) are also presented for reference.
Sampling locations are presented in Figure 1.

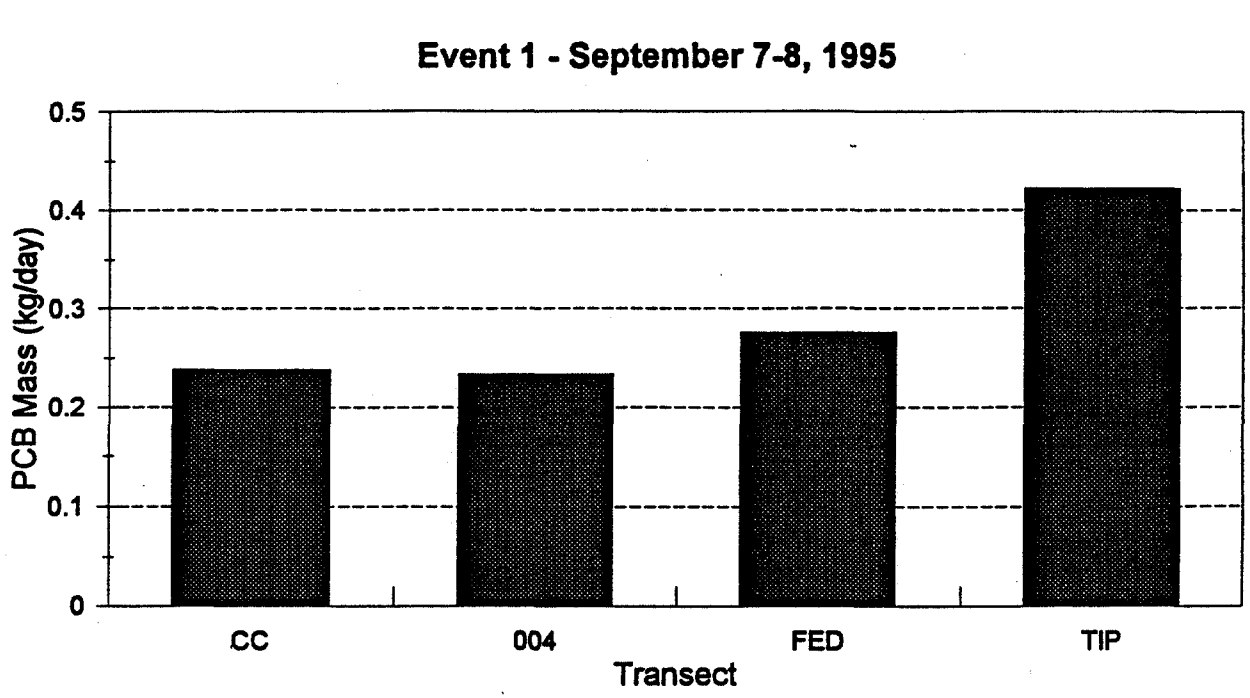
Figure 8
General Electric Company
Hudson River Project River Monitoring Test
Event 1 Hydrograph and Dye Results

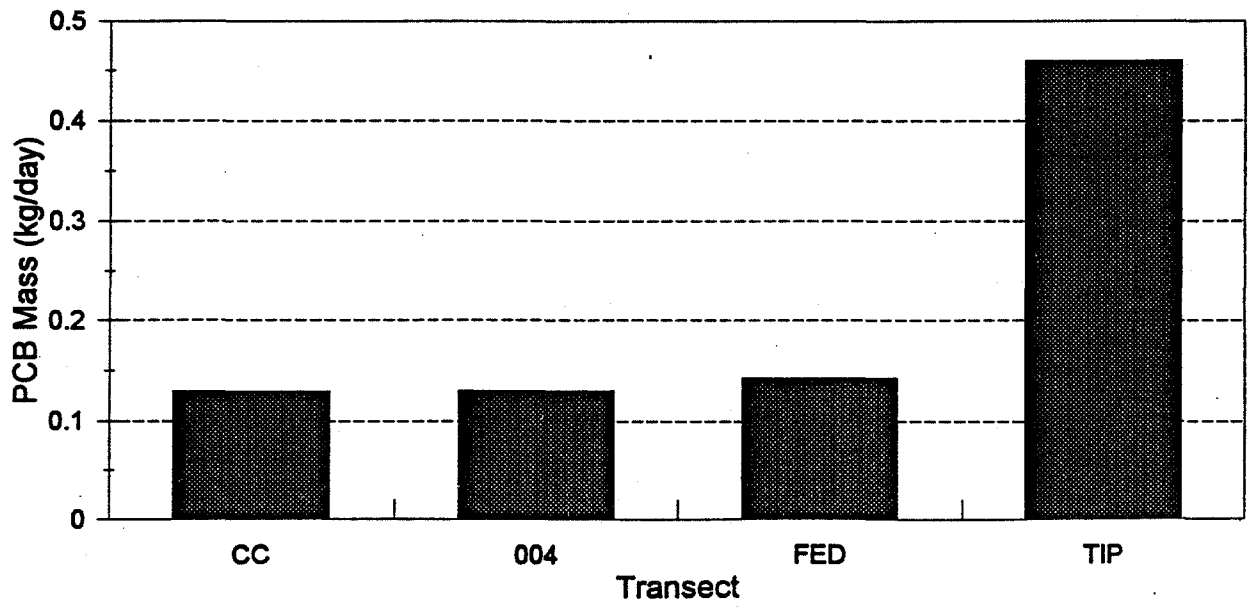


O'Brien & Gere Engineers, Inc.
November 14, 1995
b44:AllLoc.drw

Note: Rhodamine WT dye continuously released at Bakers Falls plunge pool from 10:30 am to 5:00 pm on September 7, 1995. Average concentrations are presented. Hourly flows presented are based on preliminary instantaneous readings from the USGS gauging station at Fort Edward.

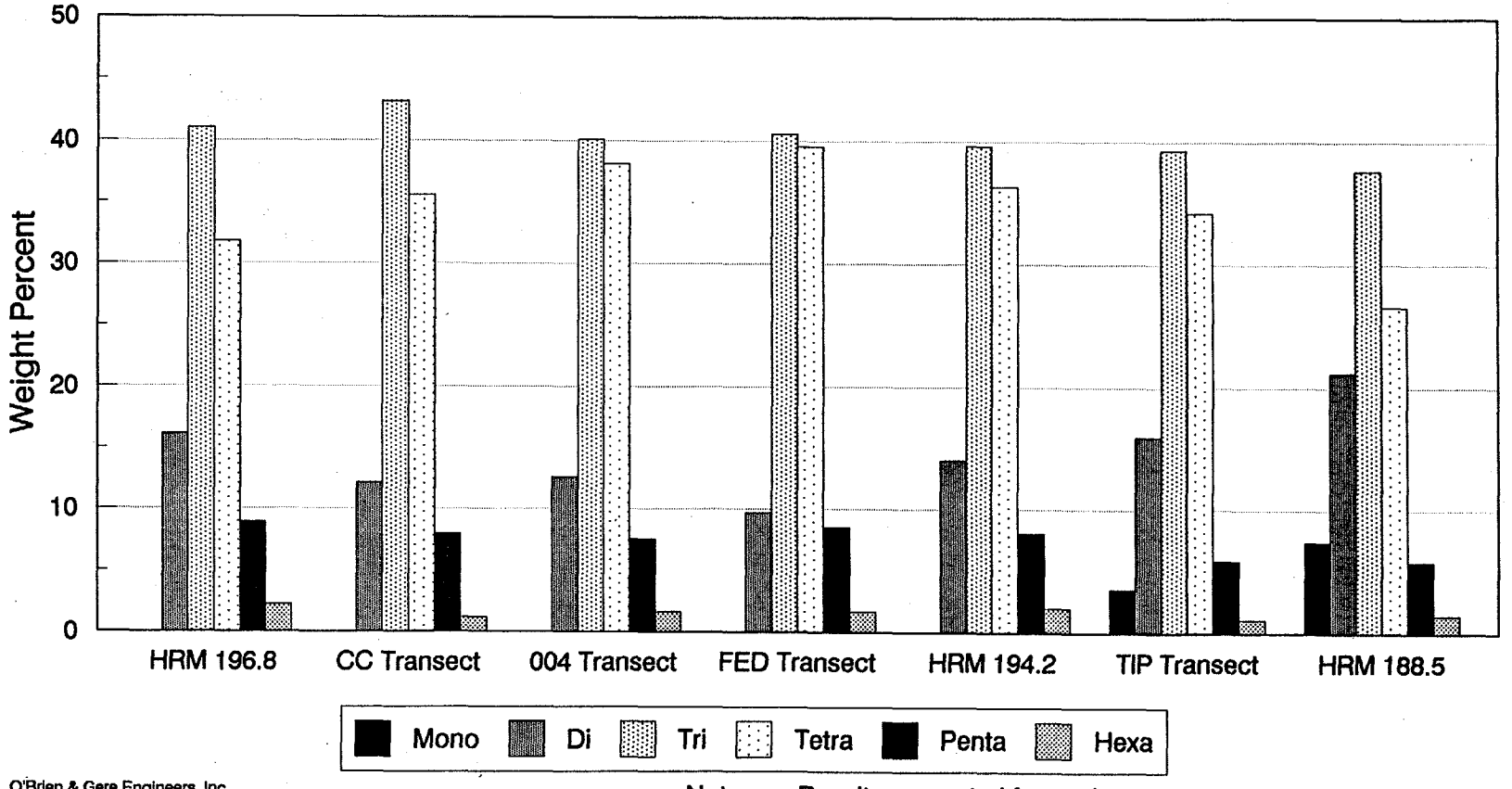
Figure 9
General Electric Company
Hudson River Project River Monitoring Test
PCB Mass Transport





Notes: PCB mass for each station (1-6) was based on the average concentration of surface and deep samples. PCB mass presented is the sum of the mass at each station. Average daily flows for Events 1 and 2 were 2,400 and 2,160 cfs respectively.

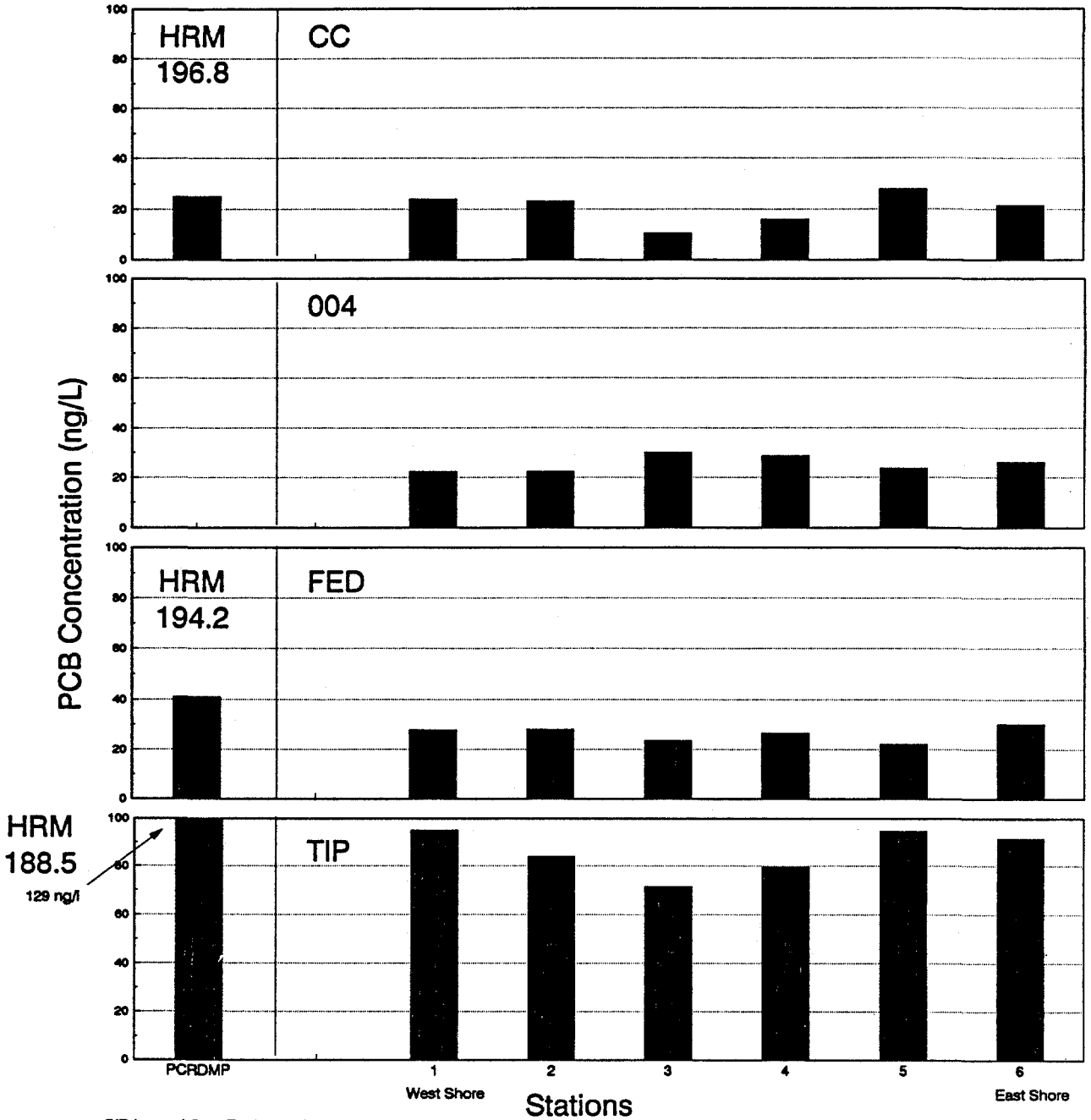
Figure 10
General Electric Company
Hudson River Project River Monitoring Test
Event 1 Average PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
December 20, 1995
B44c:Avetrans.drw

Notes: Results presented for each transect are an average of 6 stations (Standard deviations less than 3.3).
Samples from HRM 196.8, 194.2, and 188.5 were collected as part of the Post Construction Remnant Deposit Monitoring Program.
Hepta and octa concentrations less than 1%.

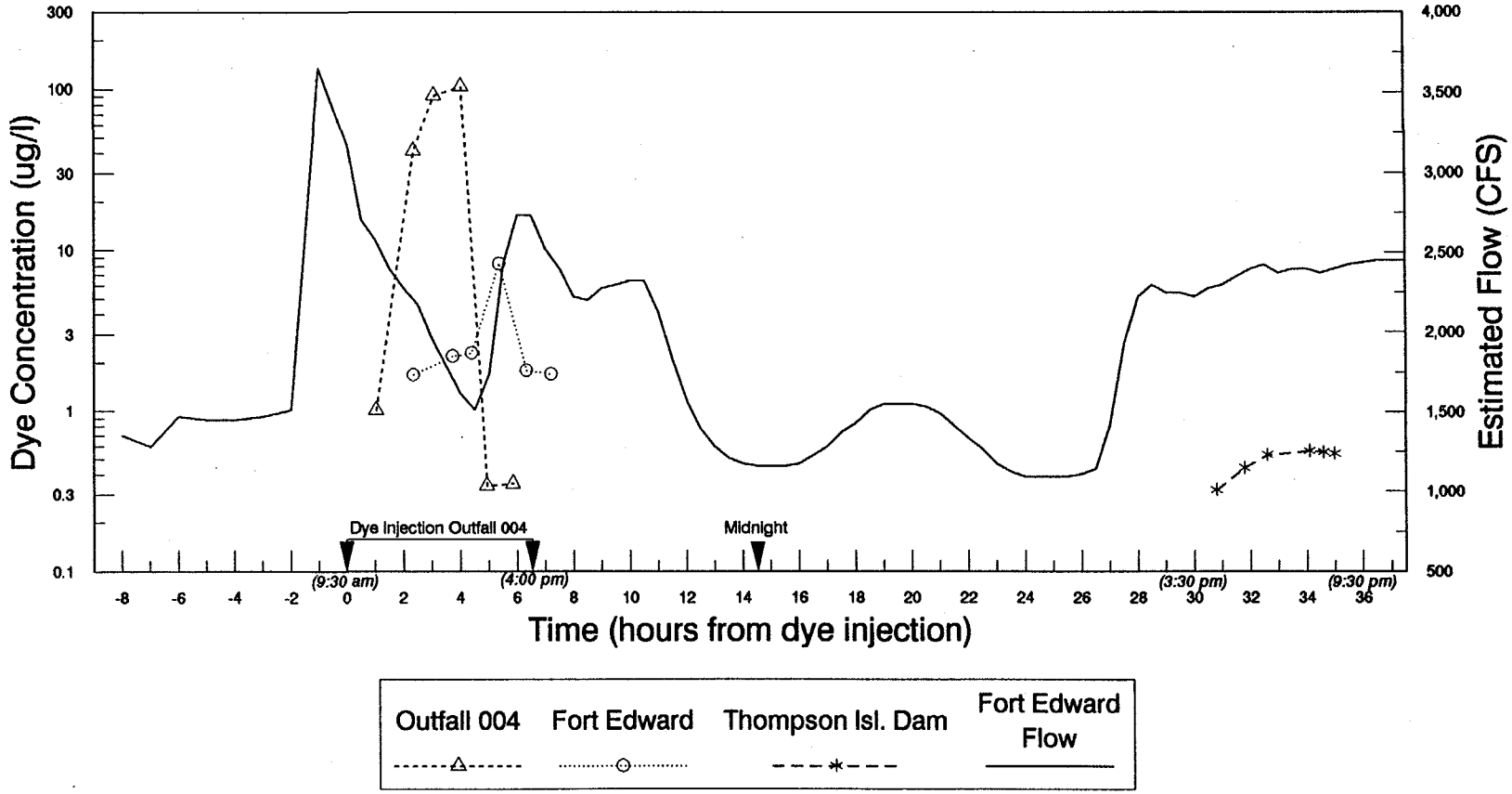
Figure 11
General Electric Company
Hudson River Project River Monitoring
Event 2 Total PCB Data



O'Brien and Gere Engineers, Inc.
January 19, 1996
b44a:gepcbf9.drw

Notes: For transect samples, total PCB concentrations presented are averages of surface and deep samples at each station.
Results of Post Construction Remnant Deposit Monitoring Program (PCRDMP) are also presented for reference.
Sampling locations are presented in Figure 1.

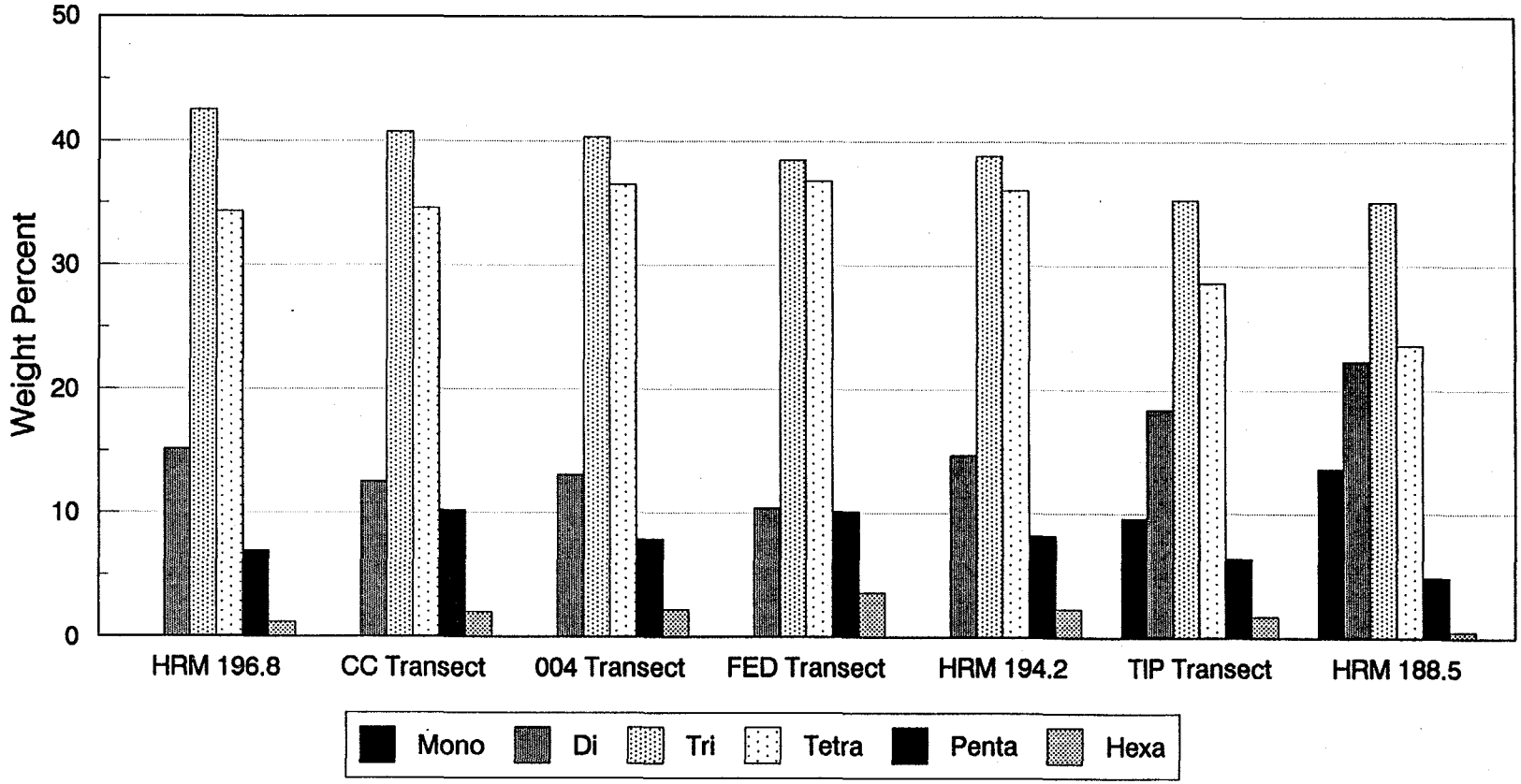
Figure 12
General Electric Company
Hudson River Project River Monitoring Test
Event 2 Hydrograph and Dye Results



O'Brien & Gere Engineers, Inc.
November 14, 1995
b46:AllLoc4.drw

Note: Rhodamine WT dye continuously released at former Outfall 004 area from 9:30 am to 4:00 pm on October 3, 1995. Station 6 concentrations are presented for Outfall 004 and Fort Edward transects, average of all stations shown for Thompson Island Pool. Hourly flows presented are based on preliminary instantaneous readings from the USGS gauging station at Fort Edward.

Figure 13
General Electric Company
Hudson River Project River Monitoring Test
Event 2 Average PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
December 20, 1995
B44c:Avetran2.drw

Notes:
- Results presented for each transect are an average of 6 stations (standard deviations less than 5.8).
- Samples from HRM 196.8, 194.2, and 188.5 were collected as a part of the Post Construction Remnant Deposit Monitoring Program.
- Hepta and octa concentrations less than 1%.

Appendices

O'BRIEN & GERE
ENGINEERS, INC.

320945

APPENDIX A

LETTERS INFORMING NYSDEC OF DYE STUDY EVENTS

John G. Haggard
Engineering Project Manager
Hudson River

Corporate Environmental Programs
General Electric Company
1 Computer Drive South, Albany, NY 12205
*518 458-6619 Dial Comm: 8*920-9619*
*Fax: 518 458-1014 Dial Comm: 8*920-9201*

August 25, 1995

Walter E. Demick, P.E.
Section Chief
Division of Hazardous Remediation
New York Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

RE: Hudson River - Enhanced River Monitoring Project

Dear Mr. Demick:

Enclosed for your review and approval is a work plan prepared by O'Brien & Gere Engineers that describes a program for testing the ability of the existing river monitoring sytem to estimate the impacts of potential PCB sources on loading to the Hudson River in the vicinity of the remnant deposits.

As part of this test, we are still evaluating the use of dense plastic beads for simulating the movement of PCB oils. However, the work plan does describes how these beads might be used and provides information on their composition.

Before we proceed with the use of dye or plastic beads in the river we will need the NYSDEC approval. The work plan contains background information on these materials. Assuming NYSDEC approval, we are planning on performing the first round of sampling on September 7, 1995.

Please contact me as soon as possible with any concerns or questions.

Sincerely,

John G. Haggard
Engineering Project Manager

Enc:

cc: Bill Ports, NYSDEC
Bob Montione, NYSDOH
Douglas Tonchuk, U.S. EPA
Victor Bierman, LimnoTech
Al D'Bernardo, TAMS
Wiley Lavigne, NYSDEC - Region 5

O'BRIEN & GERE
ENGINEERS, INC.

VIA TELEFAX

September 29, 1995

Mr. William Ports
Hudson River PCB Project
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, NY 12233

Re: Hudson River Monitoring Schedule
File: 612.198

Dear Bill:

Pursuant to John Haggard's request, we are sending this letter to inform you of the schedule for the river monitoring activities to be performed on behalf of the General Electric Company by O'Brien & Gere Engineers, Inc. (O'Brien & Gere). The second round of the river monitoring test described in the August 25, 1995 Sampling and Analysis Plan will be conducted on October 3 and 4, 1995. This event will involve the following:

- Injection of Rhodamine WT dye near the General Electric Fort Edward Plant outfall 004 over a 6-hour period beginning at approximately 9:00 am on October 3.

- Collection of dye, PCB, and TSS samples across four transects perpendicular to the river flow over a 6-hour sampling period, the timing of which will be dependent upon the time of travel of the dye front to the transect location.

The dye loading rate will be similar to that employed during the September 7 and 8 study. We will be targeting a river concentration of approximately 1.0 μg/L dye. At a river flow of 3000 cubic feet per second, this represents a dye loading rate of approximately 5.1 grams per minute, for a total dye loading of approximately 1800 grams over the 6-hour injection period.

We will make the required 24-hour notification to Region 5 on Monday, October 2, and will copy you on these notifications. I look forward to seeing you on the river next week. Please call Bill Ayling, Mark LaRue, or me if you have any questions.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

James R. Rhea, Ph.D.
Managing Scientist

JRR:djb/52:80

cc: John G. Haggard - General Electric
William A. Ayling - O'Brien & Gere
Mark D. LaRue - O'Brien & Gere

O'BRIEN & GERE
ENGINEERS, INC.

VIA TELEFAX

October 2, 1995

Mr. Wiley Lavigne
NYSDEC - Region 5
Route 86, Box 296
Ray Brook, NY 12977

Re: Hudson River Dye Study

File: 612.198

Dear Mr. Lavign:

In accordance with John Haggard's letter to you dated September 5, 1995, O'Brien & Gere Engineers, Inc. (O'Brien & Gere) is providing via this letter a 24-hour notice of dye injection into the Hudson River. Dye will be injected into the river from the General Electric Fort Edward Plant outfall 004 area. The dye injection will commence at approximately 9:00 am and continue until 3:00 pm on Tuesday, October 3.

Pursuant to your request, O'Brien & Gere contacted Mr. William Wasilauski and informed him of the dye injection schedule this morning. Mr. Wasilauski indicated during our conversation that he will inform the NYSDEC spill response center of the dye injection schedule.

If you have any questions, please contact me at the Hudson Falls Plant site at (518) 746-5229, or Mr. John Haggard of General Electric at (518) 458-6619.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

James R. Rhea, Ph.D.
Managing Scientist

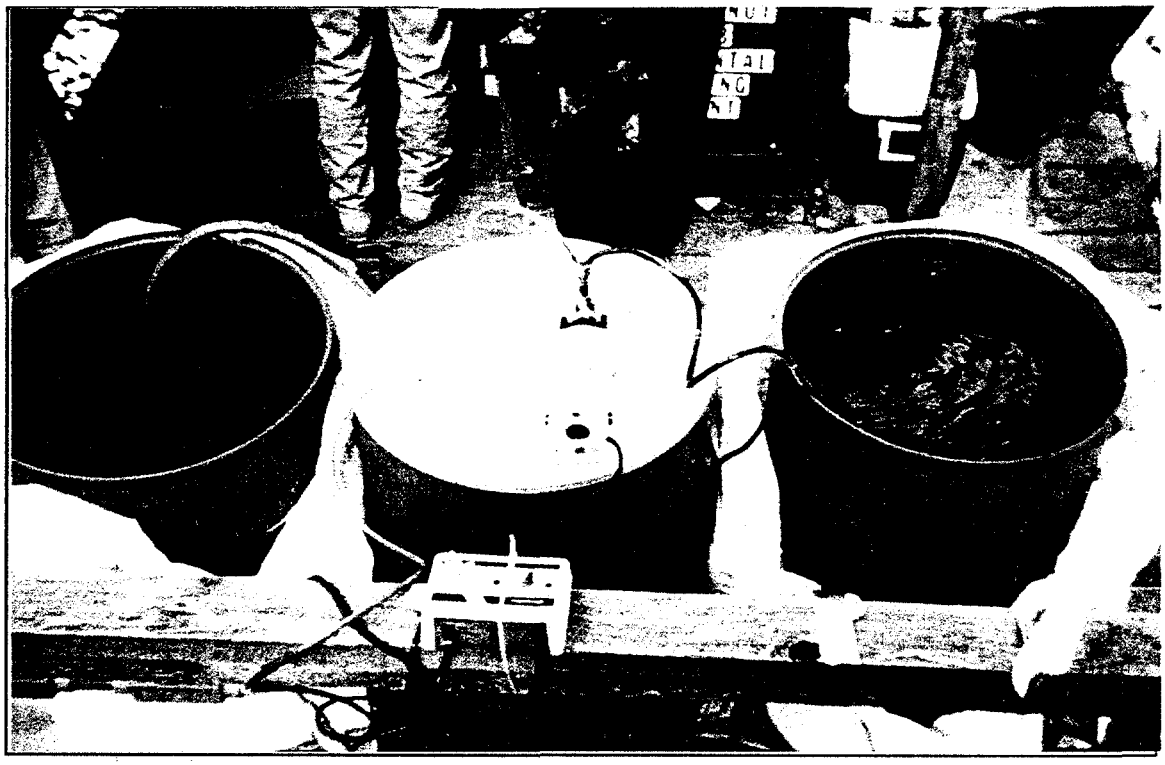
JRR:djb/52-80

cc: William Ports - NYSDEC
William Wasilauski - NYSDEC
John Haggard - General Electric

O'Brien & Gere Engineers, Inc., an O'Brien & Gere Company
5000 Brittonfield Parkway / P.O. Box 4873 / Syracuse, NY 13221 / (315) 437-6100 FAX (315) 463-7554
. . .and offices in major U.S. cities

APPENDIX B

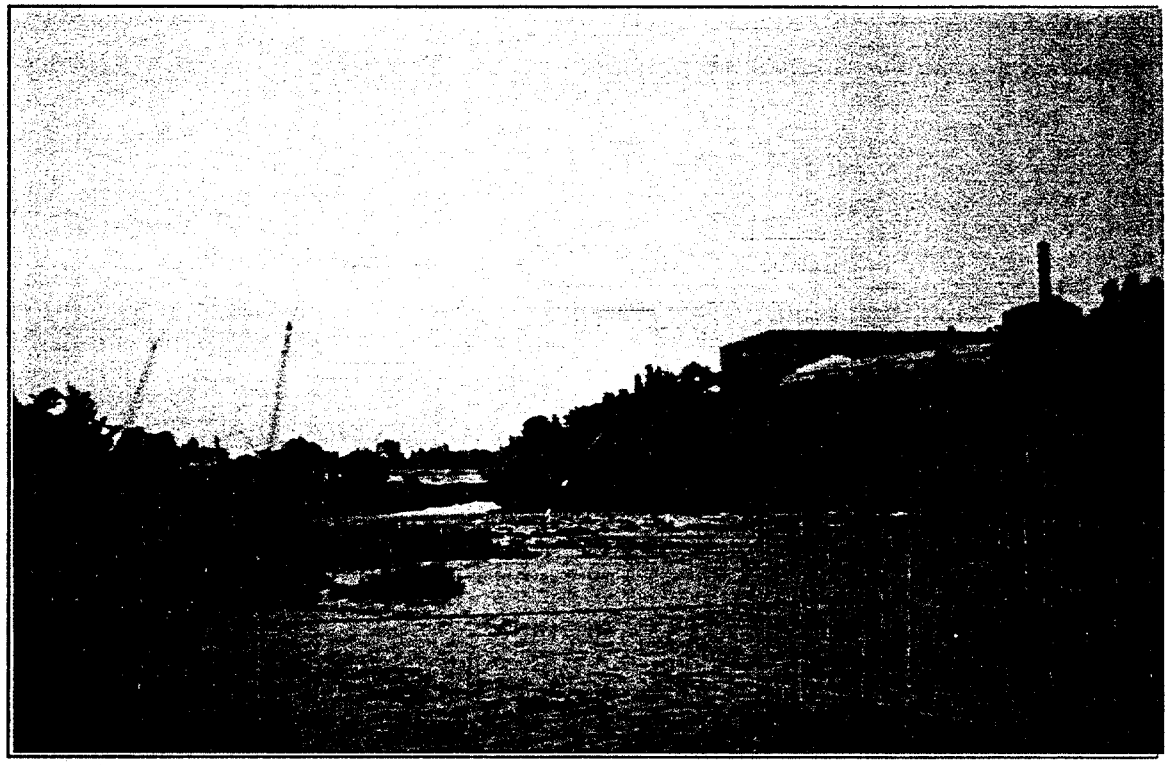
PHOTOGRAPHS OF SAMPLING ACTIVITIES



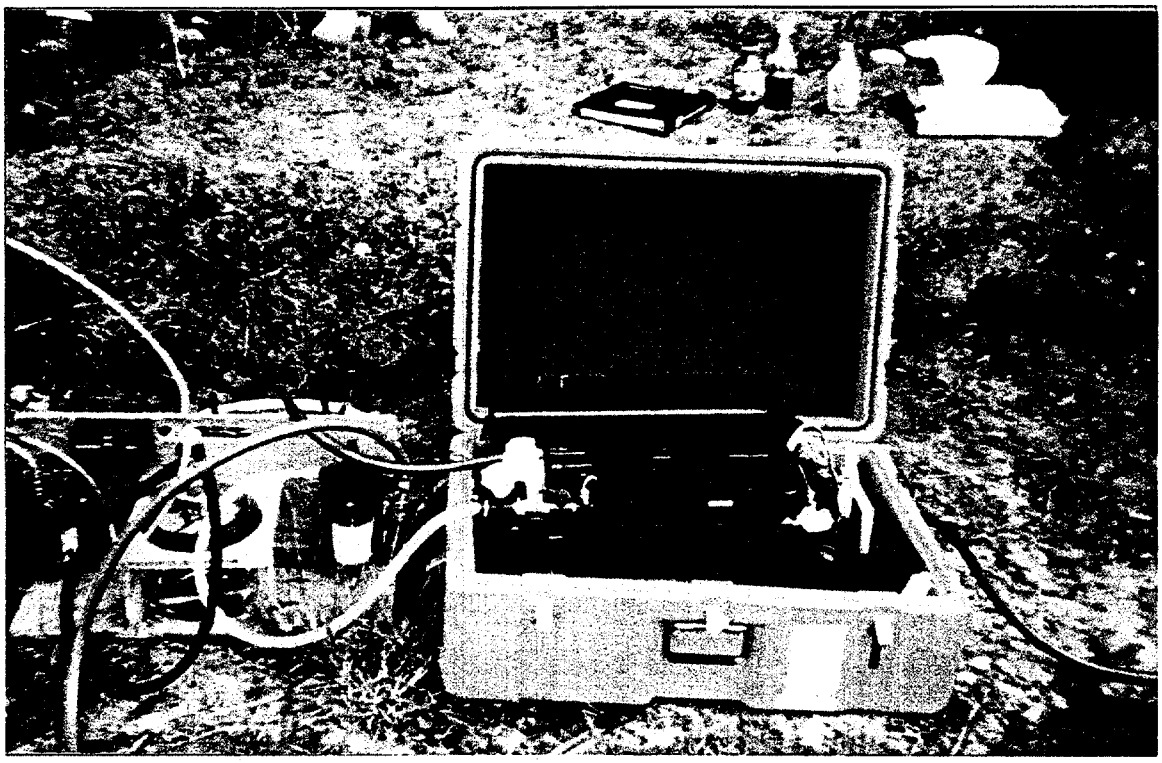
Photograph 1. Event 1 dye injection apparatus at mill site, Bakers Falls.

Photograph 2. Event 1 dye injection into the Bakers Falls plunge pool.

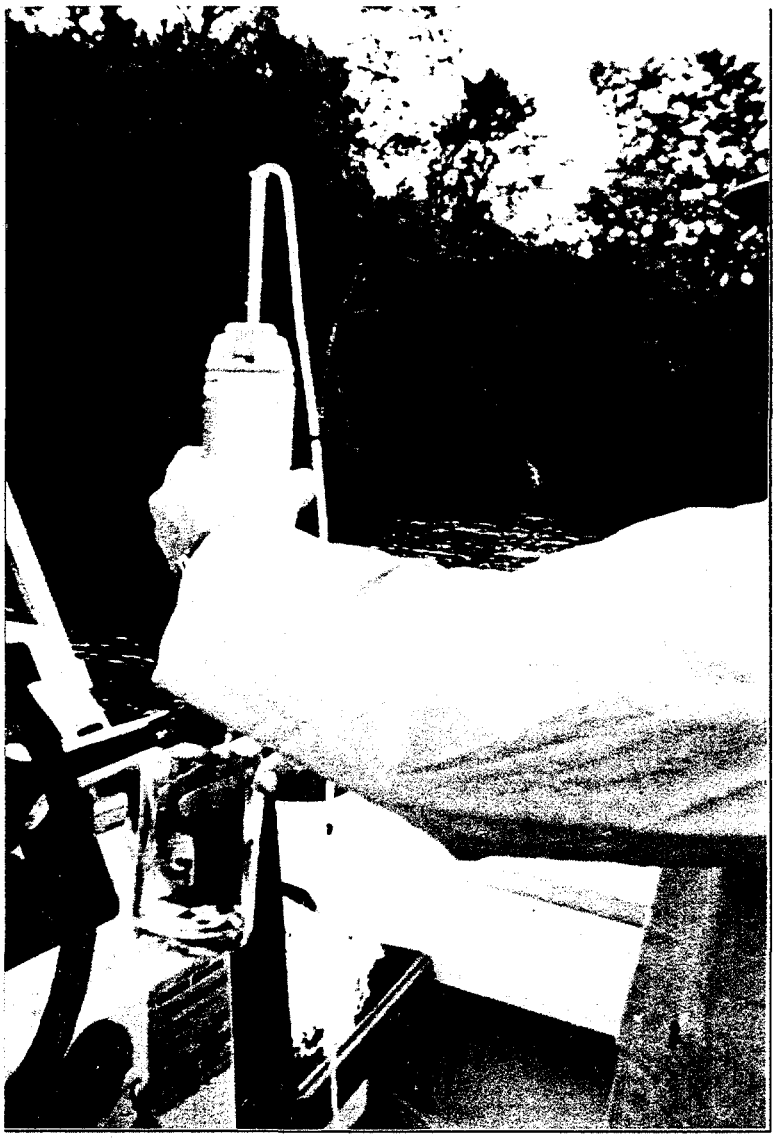
Photograph 3. Event 1 sampling at the Canoe Carry transect, approximate river mile 196.8.



Photograph 4. Event 1 looking north toward Bakers Falls from the Canoe Carry transect.

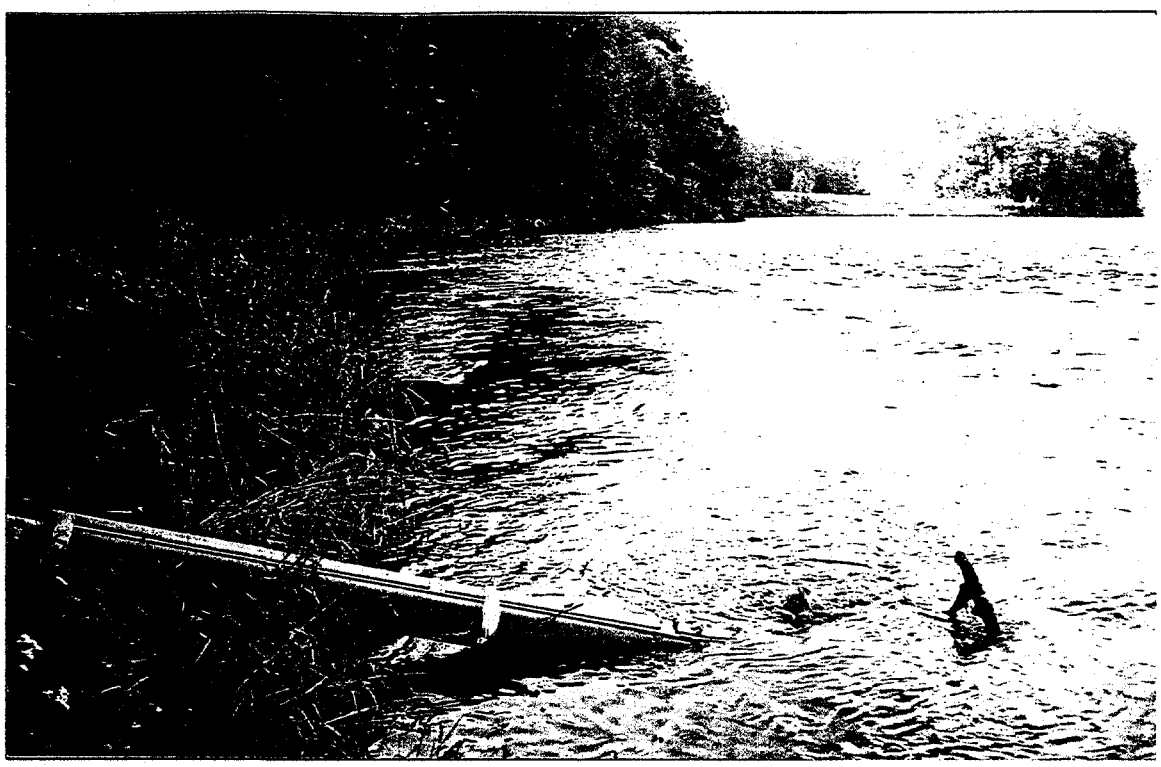


Photograph 5. Event 1 field fluorometer with in-line pump as set up at Roger's Island.

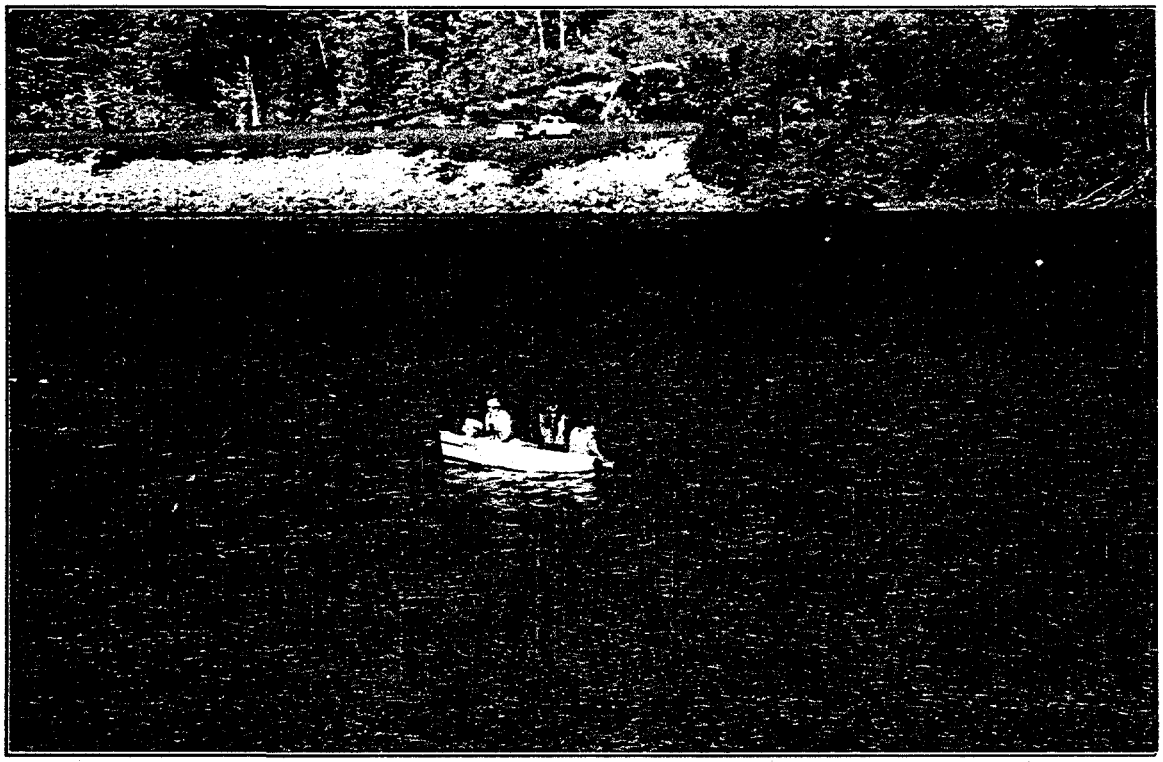


Photograph 6. Event 1 sample collection at Thompson Island Pool transect.

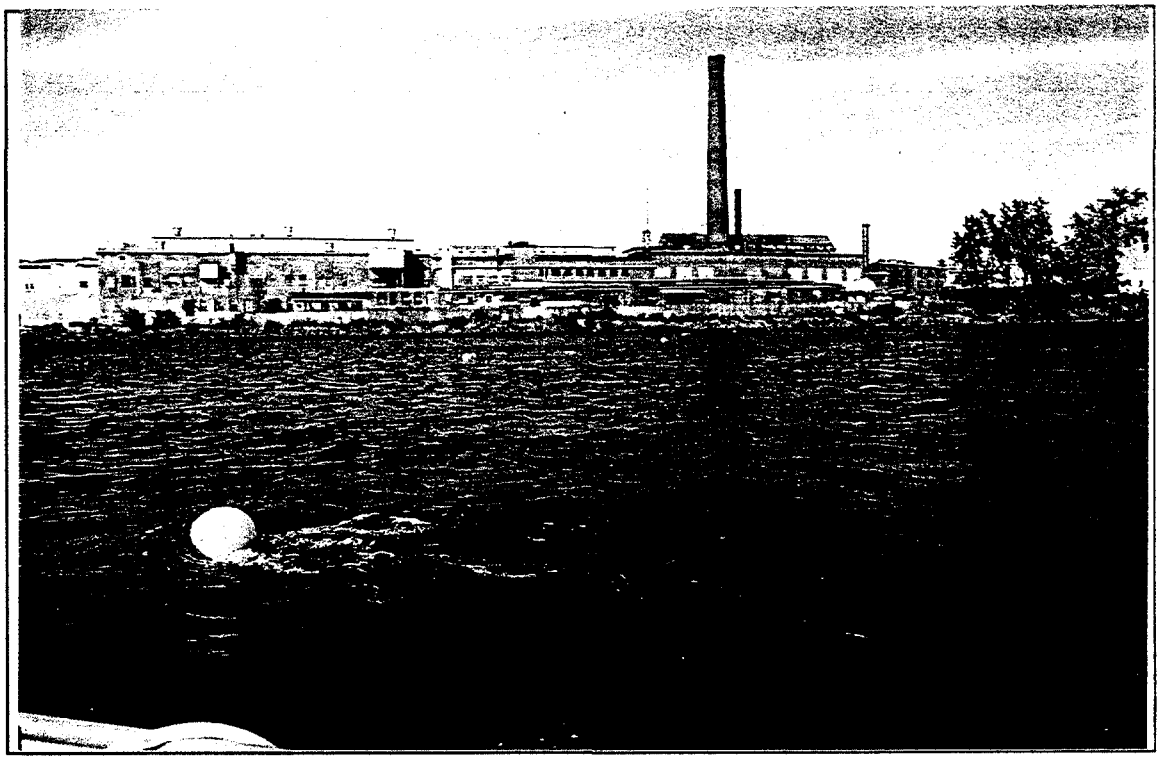
Photograph 7. Event 2 dye injection apparatus at Outfall 004.



Photograph 8. Event 2 dye injection point at Outfall 004, looking downstream to 004 transect.

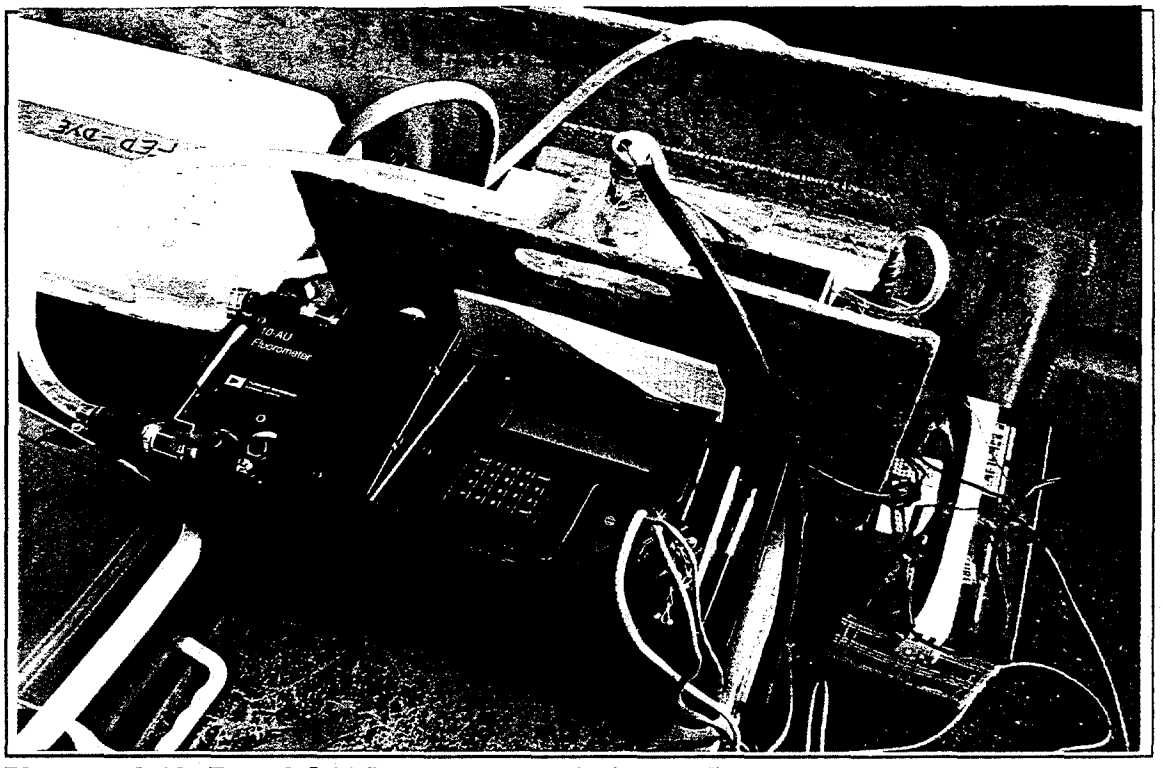


Photograph 9. Event 2 monitoring at the 004 transect.



Photograph 10. Event 2 FED transect viewed from west shore.

Photograph 11. Event 2 sampling at the FED transect.



Photograph 12. Event 2 field fluorometer set up in the sampling boat.

APPENDIX C

DYE INJECTION ESTIMATES

GENERAL ELECTRIC COMPANY
HUDSON RIVER MONITORING TEST
DYE CONCENTRATION CALCULATIONS

Assumptions:

1. desired dye concentration in river = 1.0 ug/l
2. dye has specific gravity of 1.15, dye stock is 20% dye solution
3. dye concentration in river is consistent throughout water column upon release
4. test duration = 6 hours
5. river flow rate remains constant at 1,500 cfs throughout test period

6 hr. flow $= \frac{1500\ ft3}{sec} \times \frac{60\ sec}{min} \times 360\ min \times \frac{7.48\ gal}{ft3} \times \frac{MG}{1{,}000{,}000\ gal} = 242.35\ MG$

Dye Required $= 242.35\ MG \times \frac{8.34\ lb}{MG \times ppm} \times 0.001\ ppm = 2.02\ lb$

Dye Content $= \frac{8.34\ lb}{gal} \times 1.15 \times 0.2 = 1.92\ lb/gal$ *or* $230.3\ g/L$

Dye Solution Required $= \frac{2.02\ lb}{1.92\ lb/gal} = 1.05\ gal$

Dye Dilution Factor = 100X or 0.2% solution

Volume of 0.2% solution required = 105 gal or 397.4 L

0.2% solution feed rate (1) $= \frac{397.4\ L}{360\ min} = 1.1\ L/min$

(1) - Actual feed rate was calibrated to river flow rate at Fort Edward USGS gaging station at beginning of each test

APPENDIX D

CHAIN OF CUSTODY FORMS

O'BRIEN & GERE ENGINEERS, INC.

(1 week TAT)

Job No. 412.186

Sheet 1 of 1

ffice: _____

ddress: _____

Phone: _____

Cooler Temp 2 °C

CHAIN OF CUSTODY

CLIENT: GE
LOCATION: HUDSON RIVER

COLLECTED BY: MARK D. LARUE
(Signature) Mark D. LaRue

SAMPLE DESCRIPTION	MEA #	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC-1	957046	8/24/95	15:45 - 16:45	WATER	comp.	2	EPA 8080 PCB, TSS
CC-2	957047						
CC-3	957048						
CC-4S	957049						
CC-4D	957050						
CC-5S	957051						
CC-5D	957052						
CC-6	957053	↓	↓	↓	↓	↓	↓
Center outlet power house		8/24	08:30	W	Grab	1	EPA 8080 PCB
SE of power house		8/24	08:25				
Plunge pool		8/24	08:40	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

Relinquished by:	Date	Time	Received by:	Date	Time
Mark D. LaRue of: O'Brien + Gere Engineers Inc.	8/25/95	07:00	Skip Williams of: O'Brien Gere Operations	8/25	07:00
Skip Williams of: O'Brien + Gere	8/24	09:00	Thomas Hunt of: OBrien + Gere	8/25	900
Thomas Hunt of: OBrien + Gere Operations	8/25	1040	M. Ward of: NORTHEAST ANALYTICAL	8/25	10:40
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:			Courier Name: *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: of:			Received by: of:		

djb/wpC

September 17, 1990

320964

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: SKIP Williams
(Signature) Skip Williams

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
HRM 197.0	9/7/95	~~10:15 AM~~ KAT 15:50	Water	Composite	2	PCB-NEA608CAP, TSS
HRM 196.8	—	—		Grab	2	
HRM 194.2	—	—		Composite	2	
HRM 188.5	—	—		Grab	2	
Blind duplicate - PCRDMP	—	—			2	
HRM MS	—	—			2	
HRM EQBL	—	—			2	
~~HRM 197.0S~~	9/7/95	10:15A 15:50		Composite	2	PCB-NEA608CAP, TSS
~~HRM 197.0D~~				Composite	2	PCB-NEA608CAP, TSS
~~HRM 197.0~~	~~9/7/95~~	~~10:15A 15:50~~		Composite	1	TSS
HRM 196.8	—	—		Grab	1	TSS
HRM 194.2	—	—		Composite	1	TSS
HRM 188.5	—	—		Grab	1	TSS
Blind duplicate - PCRDMP	—	—			1	TSS

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

Relinquished by / of	Date	Time	Received by / of	Date	Time
Relinquished by: Skip Williams of: OBG	9/7/95	23:15	Received by: Kerry Thurston of: OBrien & Gere Eng.	9/7/95	23:15
Relinquished by: Kerry A. Thurston of: OBrien & Gere Eng.	9/8/95	08:45	Received by: Walter A Hutz of: NEA	9/8/95	08:45
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of:			Received by: _____ of:		

djb/wpC

September 4, 1995

320965

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 1 of 1

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: MD. LaRue, Bob Halbritter, Ralph Morse
(Signature)

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S	9/7	12:02 - 17:02	Water	Composite 6hrs	2	PCB-NEA608CAP, TSS
CC1D		12:05 - 17:03				
CC2S		12:10 - 17:05				
CC2D		12:12 - 17:07				
CC3S		12:15 - 17:09				
CC3D		12:17 - 17:11				
CC4S		12:21 17:12				
CC4D		12:24 17:14				
CC5S		12:29 - 17:18				
CC5D		12:30 - 17:19				
CC6S		12:34 17:20				
CC6D		12:35 17:22				
					1	PCB-NEA608CAP
Blind Field Duplicate: HRdup1	9/7	—			2	PCB-NEA608CAP, TSS
CC EQBL	9/7	16:33		Grab	1	PCB-NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: CBS	9/7/95	19:32	Received by: Kerry Thurston of: O'Brien Gere Engineers	9/7/95	19:32
Relinquished by: Kerry A. Thurston of: O'Brien & Gere Eng.	9/8/95	08:45	Received by: _____ of: NEA	9/8/95	08:45
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

djb/wpC

September 4, 1995

320966

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 1 of 1

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: SEM, WAA, JMF
(Signature) William Ayling Jmf M. Farrell

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S	9/7	1715	Water	Composite	2	PCB-NEA608CAP, TSS
0041D	9/7	1716				
0042S	9/7	1718				
0042D	9/7	1720				
0043S	9/7	1725				
0043D	9/7	1726				
0044S	9/7	1731				
0044D	9/7	1732				
0045S	9/7	1738				
0045D	9/7	1739				
0046S	9/7	1743				
0046D	9/7	1744				
0041S-MS	9/7	1715			1	PCB-NEA608CAP
Blind Field Duplicate: HRdup2	9/7	—			2	PCB-NEA608CAP, TSS
004 EQBL	9/7	0913		Grab	1	PCB-NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng.	9/7/95	23:15	Received by: Kerry Thurston of: O'Brien & Gere Eng.	9/7/95	23:15
Relinquished by: Kerry A. Thurston of: O'Brien & Gere Eng.	9/8/95	08:45	Received by: [illegible] of: NEA	9/8/95	08:45
Relinquished by: of:			Received by: of:		
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September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 1 of 1

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: ERIC HAUSAMANN
(Signature) Eric Hausamann

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S	9/7/95	18:43	Water	Composite	2	PCB-NEA608CAP, TSS
FED1D		18:50				
FED2S		18:53				
FED2D		18:55				
FED3S		18:57				
FED3D		18:58				
FED4S		19:00				
FED4D		19:02				
FED5S		19:04				
FED5D		19:05				
FED6S		19:07				
FED6D		19:09				
FED6S-MS		19:03			1	PCB-NEA608CAP
Blind Field Duplicate: HRdup3		18:49			2	PCB-NEA608CAP, TSS
FED EQBL		18:53		Grab	1	PCB-NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Eric Hausamann of: O'BRIEN & GERE	9/7/95	20:55	Received by: Kerry Thurston of: O'Brien & Gere Eng.	9/7/95	20:55
Relinquished by: Kerry A Thurston of: O'Brien & Gere Eng.	9/8/95	08:45	Received by: Walter Hall of: NEA	9/8/95	08:45
Relinquished by: of:			Received by: of:		
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September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186

Sheet 1 of 1

Office: Syracuse

Address:

Phone: 315 437 6100

CHAIN OF CUSTODY

CLIENT: General Electric

LOCATION: Hudson River

COLLECTED BY: MD LaRue, WA Ayling, JR Rice (Signature) WAyling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S	9/8/95	1535	WATER	Composite	2	PCB-NEA608CAP, TSS
TIP1D		1535				
TIP2S		1540				
TIP 2D		1540				
TIP3S		1545				
TIP 3D		1545				
TIP 4S		1550				
TIP4D		1550				
TIP5S		1555				
TIP5D		1555				
TIP6S		1600				
TIP6D		1600				
BLIND DUPLICATE		—		↓	↓	↓
TIPEQBL		10:30	↓	GRAB	1	PCB-NEA608CAP

RED COOLER : 12°C
BLUE COOLER : 9°C

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

	Relinquished by:	Date	Time	Received by:	Date	Time
1	William Ayling of: O'Brien & Gere Engineers	9/8/95	17:15	Thomas J. Murphy of:	9/8/95	1715
2	Thomas J. Murphy of:	9/8/95	1830	Robert S. Wagner of: Northeast Analytical Inc	9/8/95	1830
3	of:			of:		
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4	of:			of:		

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September 17, 1990

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O'BRIEN & GERE ENGINEERS, INC.

(1 week TAT)

Job No. 412.186

Sheet 1 of 1

Office: _____

Address: _____

Phone: _____

Cooler Temp 2 °C

CHAIN OF CUSTODY

CLIENT: GE LOCATION: HUDSON RIVER			COLLECTED BY: MARK D. LARUE (Signature) Mark D. LaRue			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC-1	8/24/95	15:45 - 16:45	WATER	comp.	2	EPA 8080 PCB, TSS
CC-2	↓	↓	↓	↓	↓	↓
CC-3						
CC-4S						
CC-4D						
CC-5S						
CC-5D						
CC-6	↓	↓	↓	↓	↓	↓
Center outlet power house	8/24	08:30	W	Grab	1	EPA 8080 PCB
SE of power house	8/24	08:25	↓	↓	↓	↓
Plunge pool	8/24	08:40	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

Relinquished by:	Date	Time	Received by:	Date	Time
Mark D. LaRue of: O'Brien & Gere Engineers, Inc.	8/25/95	07:00	Skip Williams of: O'Brien & Gere Operations	8/25	07:00
Skip Williams of: O'Brien & Gere	8/24	09:00	Thomas Gee of: O'Brien & Gere	8/25	900
Thomas Gee of: O'Brien & Gere Operations	8/25	1040	M. Kuhl of: NORTHEAST ANALYTICAL	8/25	10:40
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Relinquished by: of:	Date	Time	Received by: of:	Date	Time

djb/wpC

September 17, 199

320970

Job No. 612.198.352
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: SKIP Williams
(Signature) Skip Williams

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
HRM 197.0	10/3	09:~~45~~	Water	Composite	2	PCB-NEA608CAP, TSS
HRM 196.8		10:10		Grab	2	
HRM 194.2		10:45		Composite	2	
HRM 188.5		11:25		Grab	2	
Blind duplicate - PCRDMP		—		—	2	
HRM MS 197.0		09:45			2	
HRM EQBL 197.0		09:00			2	
HRM 197.0S		08:30 13:15		Composite	2	PCB-NEA608CAP, TSS
HRM 197.0D		08:30 13:15		Composite	2	PCB-NEA608CAP, TSS
HRM 197.0		09:45		Composite	1	TSS
HRM 196.8		10:10		Grab	1	TSS
HRM 194.2		10:45		Composite	1	TSS
HRM 188.5		11:25		Grab	1	TSS
Blind duplicate - PCRDMP		—		—	1	TSS

HRM 194.2 USGS Fish Sampler 10:45 W Grab 1 PCB NEA608CAP (NO DATA R

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

COOLER TEMP 6°C

Relinquished by:	Date	Time	Received by:	Date	Time
Skip Williams of: O'Brien & Gere Operations	10/3	18:35	William Ayling of: O'Brien & Gere Eng.	10/3/95	18:35
Relinquished by: William Ayling of: O'Brien & Gere	10/4/95	8:58	Received by: Natalie O'Hara of: NEA	10/4/95	8:50
Relinquished by: of:	Date	Time	Received by: of:	Date	Time
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Relinquished by: of:	Date	Time	Received by: of:	Date	Time

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September 29, 1995

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Job No. 612.198.352
Sheet 1 of 1

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY: (Signature) M.D. LaRue, Bob Holbrook & Ralph Morse			
SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S	10/3	15:03	Water	Composite	2	PCB-NEA608CAP, TSS
CC1D		15:02				
CC2S		15:07				
CC2D		15:06				
CC3S		15:09				
CC3D		15:08				
CC4S		15:13				
CC4D		15:12				
CC5S		15:18				
CC5D		15:16				
CC6S		15:21				
CC6D		15:20				
Blind Field Duplicate: HRdup1	10/3	—			2	PCB-NEA608CAP, TSS
CC EQBL	10/3	9:24		Grab	1	PCB-NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

COOLER TEMP 7°C

	Date	Time		Date	Time
Relinquished by: Mark D. LaRue of: O'Brien & Gere Engineers	10/3/95	17:40	Received by: Skip Williams of: O'Brien & Gere Operations	10/3/95	17:40
Relinquished by: Skip Williams of: O'Brien & Gere Ops	10/3	18:45	Received by: William Ayling of: O'Brien & Gere Eng.	10/3/95	1845
Relinquished by: William Ayling of: O'Brien & Gere	10/4/95	8:50	Received by: Judith A Tate of: NEA	10/4/95	8:50
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September 29,

320972

Job No. 612.198.352
Sheet 1 of 1

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: Bill Ayling, Dick Rybinski, Janet Forsell
(Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S	10/3/95	1450	Water	Composite	2	PCB-NEA608CAP, TSS
0041D		1459				
0042S		1501				
0042D		1502				
0043S		1503				
0043D		1504				
0044S		1509				
0044D		1511				
0045S		1515				
0045D		1516				
0046S		1518				
0046D		1519				
0043S-MS		1504			1	PCB-NEA608CAP
Blind Field Duplicate: HRdup2		—			2	PCB-NEA608CAP, TSS
004 EQBL		7.50		Grab	1	PCB-NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite COOLER TEMP 6°C

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng	10/4/95	8:50	Received by: [signature] of: NEA	10/4/95	8:50
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
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September 29, 1995

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Job No. 612.198.352
Sheet 1 of *1

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY:
(Signature) Pamela J Flynn

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S	10/3/95	11:20	Water	Composite	2	PCB-NEA608CAP, TSS
FED1D		11:20	16:22			
FED2S		11:25	16:26			
FED2D		11:25	16:26			
FED3S		11:29	16:30			
FED3D		11:29	16:30			
FED4S		11:33	16:34			
FED4D		11:33	16:34			
FED5S		11:36	16:38			
FED5D		11:36	16:38			
FED6S		11:36	16:45			
FED6D		11:36	16:45			
FED1S-MS		11:20	16:22		1	PCB-NEA608CAP
Blind Field Duplicate: HRdup3	↓	—	—		2	PCB-NEA608CAP, TSS
FED EQBL	10/3/95	10:03		Grab	1	PCB-NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite COOLER TEMP 4°C

	Date	Time		Date	Time
Relinquished by: Pamela J Flynn of: O'Brien & Gere	10/4/95	6:05	Received by: William Ayling of: O'Brien & Gere Eng.	10/4/95	6:05
Relinquished by: William Ayling of:	10/4/95	8:50	Received by: [illegible] of: NEA	10/5/95	8:50
Relinquished by: of:			Received by: of:		
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September 29, 199

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Job No. 612.198.352
Sheet 1 of 1

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

cooler Temp 9°C

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: MARK D. LaPIER
(Signature) Mark D. LaPier

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S	10/4/95	20:25	Water	Composite	2	PCB-NEA608CAP, TSS
TIP1D		20:23				
TIP2S		20:28				
TIP2D		20:27				
TIP3S		20:33				
TIP3D		20:31				
TIP4S		20:36				
TIP4D		20:34				
TIP5S		20:39				
TIP5D		20:37				
TIP6S		20:44				
TIP6D		20:42				
Blind Field Duplicate: HRdup4		—			2	PCB-NEA608CAP, TSS
TIP EQBL	↓	16:00	↓	Grab	1	PCB-NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Mark D. LaPier of: O'Brien & Gere Engineers	10/5/95	10:50	Received by: M. KASKEL of: NORTHEAST ANALYTICAL	10/5/95	10:50
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
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September 29, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 1 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: (Signature) M D. LaRue, Bob Halbritter & Ralph Morse

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S-1	9/7	12:02	Water	Grab	1	Dye
CC1D-1	"	12:05	"	"	"	"
CC2S-1	"	12:10	"	"	"	"
CC2D-1	"	12:12	"	"	"	"
CC3S-1	"	12:15	"	"	"	"
CC3D-1	"	12:17	"	"	"	"
CC4S-1	"	12:21	"	"	"	"
CC4D-1	"	2:24	"	"	"	"
CC5S-1	"	12:29	"	"	"	"
CC5D-1	"	12:30	"	"	"	"
CC6S-1	"	12:34	"	"	"	"
CC6D-1	"	12:35	"	"	"	"
~~Blind Field Duplicate~~ RSM 9/7/95	~~"~~	N/A	~~"~~	~~"~~	~~"~~	~~"~~

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: M D. LaRue of: OBG	9/7/95	19:32	Received by: Kerry Thurston of: O'Brien & Gere Engineers	9/7/95	19:32
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
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September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 2 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: M.D. LaRue, Bob Holbritter, Ralph Morse
(Signature)

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S-2	9/7	13:05	Water	Grab	1	Dye
CC1D-2		13:07				
CC2S-2		13:09				
CC2D-2		13:11				
CC3S-2		13:13				
CC3D-2		13:15				
CC4S-2		13:20				
CC4D-2		13:23				
CC5S-2		13:28				
CC5D-2		13:30				
CC6S-2		13:33				
CC6D-2	↓	13:36				
Blind Field Duplicate CCDUP1	9/7	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: M.D. LaRue of: OBG	9/7/95	19:32	Received by: Kerry Thurston of: O'Brien & Gere Engineers	9/7/95	19:32
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
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Relinquished by: of:			Received by: of:		

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September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 3 of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: M.D. LaRue, Bob Halbritter & Ralph Morse
(Signature)

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S-3	9/7	14:09	Water	Grab	1	Dye
CC1D-3		14:11				
CC2S-3		14:16				
CC2D-3		14:17				
CC3S-3		14:20				
CC3D-3		14:22				
CC4S-3		14:24				
CC4D-3		14:26				
CC5S-3		14:32				
CC5D-3		14:34				
CC6S-3		14:42				
CC6D-3		14:44				
Blind Field Duplicate CCDUP2	9/7	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by:			Received by: Kerry Thurston		
of: OBG	9/7/95	19:32	of: OBrien & Gere Eng.	9/7/95	19:32
Relinquished by:			Received by:		
of:			of:		
Relinquished by:			Received by:		
of:			of:		
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Relinquished by:			Received by:		
of:			of:		

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September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 4 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY: (Signature) M.D. LaRue, Bob Halbritter, Ralph Inosce			
SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S-4	9/7	15:06	Water	Grab	1	Dye
CC1D-4		15:08				
CC2S-4		15:10				
CC2D-4		15:11				
CC3S-4		15:15				
CC3D-4		15:17				
CC4S-4		15:19				
CC4D-4		15:20				
CC5S-4		15:25				
CC5D-4		15:27				
CC6S-4		15:29				
CC6D-4		15:31				
Blind Field Duplicate CCDUP3	9/7	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by:			Received by: Kerry Thurston		
of: OBG	9/7/95	19:32	of: OBrien & Gere Eng.	9/7/95	19:32
Relinquished by:			Received by:		
of:			of:		
Relinquished by:			Received by:		
of:			of:		
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Relinquished by:			Received by:		
of:			of:		

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September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 5 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**	COLLECTED BY: M.D. LaRue, Bob Kilbritter & Ralph Inscc (Signature)

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S-5	9/7	16:03	Water	Grab	1	Dye
CC1D-5		16:04				
CC2S-5		16:06				
CC2D-5		16:08				
CC3S-5		16:10				
CC3D-5		16:11				
CC4S-5		16:13				
CC4D-5		16:15				
CC5S-5		16:18				
CC5D-5		16:20				
CC6S-5		16:22				
CC6D-5		16:23				
Blind Field Duplicate CCDUP-4	9/7	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by:			Received by:		
of: OBG	9/7/95	19:32	of: OBrien & Gere Eng.	9/7/95	19:32
Relinquished by:			Received by:		
of:			of:		
Relinquished by:			Received by:		
of:			of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:			Courier Name:		
of:			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:			Received by:		
of:			of:		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 6 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: M.D. LaRue, B.J. Holbritter & Ralph Inorse
(Signature)

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
CC1S-6	9/7	17:02	Water	Grab	1	Dye
CC1D-6		17:03				
CC2S-6		17:05				
CC2D-6		17:07				
CC3S-6		17:09				
CC3D-6		17:11				
CC4S-6		17:12				
CC4D-6		17:14				
CC5S-6		17:18				
CC5D-6		17:19				
CC6S-6		17:20				
CC6D-6		17:22				
~~Blind Field Duplicate~~						

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by:	Date	Time	Received by:	Date	Time
of: OBG	9/7/95	19:32	of: O'Brien & Gere Eng.	9/7/95	19:32
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:	Date	Time	Courier Name:	Date	Time
of:			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		

jjb/wpC

September 4, 1995

320981

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 1 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: SEM, WAA, JMF
(Signature) William Ayling

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-1	9/7	1219	Water	Grab	1	Dye
0041D-1	9/7	1223				
0042S-1	9/7	1229				
0042D-1	9/7	1231				
0043S-1	9/7	1235				
0043D-1	9/7	1237				
0044S-1	9/7	1240				
0044D-1	9/7	1243				
0045S-1	9/7	1248				
0045D-1	9/7	1251				
0046S-1	9/7	1254				
0046D-1	9/7	1256				
Blind Field Duplicate	9/7	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng.	9/7/95	23:10	Received by: of:		
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:			Courier Name: *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: of:			Received by: of:		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 2 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: General Electric
LOCATION: Hudson River

COLLECTED BY: SEM, WAA, JMF
(Signature) William Ayling Brent M. Farrell

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-2	9/7	1317	Water	Grab	1	Dye
0041D-2	9/7	1320				
0042S-2	9/7	1323				
0042D-2	9/7	1325				
0043S-2	9/7	1330				
0043D-2	9/7	1331				
0044S-2	9/7	1335				
0044D-2	9/7	1336				
0045S-2	9/7	1341				
0045D-2	9/7	1343				
0046S-2	9/7	1347				
0046D-2	9/7	1348				
Blind Field Duplicate	9/7	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng.	9/7/95	23:10	Received by: of:		
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:			Courier Name: *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: of:			Received by: of:		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 3 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: SEW, WAA, JMP
(Signature) William Ayling, Janet M. Farrell

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-3	9/7	1415	Water	Grab	1	Dye
0041D-3	9/7	1418				
0042S-3	9/7	1422				
0042D-3	9/7	1424				
0043S-3	9/7	1425				
0043D-3	9/7	1430				
0044S-3	9/7	1432				
0044D-3	9/7	1433				
0045S-3	9/7	1437				
0045D-3	9/7	1440				
0046S-3	9/7	1442				
0046D-3	9/7	1444				
Blind Field Duplicate	9/7	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Relinquished by	Date	Time	Received by	Date	Time
	William Ayling					
of:	O'Brien & Gere Eng.	9/7/95	23:10	of:		
of:				of:		
of:				of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:				Courier Name:		
of:				*Attach delivery/courier receipt to Chain of Custody		
of:				of:		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 4 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY (Signature) Sews, WAA, Jun= William Ayling Janet M. Fussell			
SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-4	9/7	1518	Water	Grab	1	Dye
0041D-4	9/7	1520				
0042S-4	9/7	1522				
0042D-4	9/7	1524				
0043S-4	9/7	1526				
0043D-4	9/7	1528				
0044S-4	9/7	1529				
0044D-4	9/7	1532				
0045S-4	9/7	1535				
0045D-4	9/7	1537				
0046S-4	9/7	1539				
0046D-4	9/7	1541				
~~Blind Field Duplicate~~	9/7					

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by: William Ayling of: ✓	Date 9/7/95	Time 23:10	Received by: of:	Date	Time
Relinquished by: of:	Date	Time	Received by: of:	Date	Time
Relinquished by: of:	Date	Time	Received by: of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:	Date	Time	Courier Name: *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: of:	Date	Time	Received by: of:	Date	Time

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 5 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: WAA, SEM, JMF
(Signature) William Ayling / Janet M. Fiscella

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-5	9/7	1616	Water	Grab	1	Dye
0041D-5	9/7	1618				
0042S-5	9/7	1620				
0042D-5	9/7	1622				
0043S-5	9/7	1624				
0043D-5	9/7	1626				
0044S-5	9/7	1629				
0044D-5	9/7	1634				
0045S-5	9/7	1644				
0045D-5	9/7	1646				
0046S-5	9/7	1648				
0046D-5	9/7	1649				
~~Blind Field Duplicate~~ (A)						

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng.	9/8/95	23:10	Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet 6 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: WAA, SEM, JMF
(Signature) William Ayling, Jane M. Fraser

SAMPLE DESCRIPTION	1995 Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-6	9/7	1715	Water	Grab	1	Dye
0041D-6	9/7	1716				
0042S-6	9/7	1718				
0042D-6	9/7	1720				
0043S-6	9/7	1725				
0043D-6	9/7	1726				
0044S-6	9/7	1731				
0044D-6	9/7	1732				
0045S-6	9/7	1738				
0045D-6	9/7	1739				
0046S-6	9/7	1743				
0046D-6	9/7	1744				
Blind Field Duplicate	9/7	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Engr.	9/7/95	23:10	Received by: of:		
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:			Courier Name: *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: of:			Received by: of:		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: TEDD FISKE
(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-1	9/7/95	13:45	Water	Grab	1	Dye
FED1D-1		13:46				
FED2S-1		13:48				
FED2D-1		13:49				
FED3S-1		13:51				
FED3D-1		13:52				
FED4S-1		13:54				
FED4D-1		13:56				
FED5S-1		13:58				
FED5D-1		14:00				
FED6S-1		14:02				
FED6D-1		14:04				
Blind Field Duplicate	NA	NA	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: OBG.	9/7/95	20:55	Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: TODD FISKE
(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-2	9/7	14:45	Water	Grab	1	Dye
FED1D-2	"	14:46	"	"	"	"
FED2S-2	"	14:48	"	"	"	"
FED2D-2	"	14:49	"	"	"	"
FED3S-2	"	14:50	"	"	"	"
FED3D-2	"	14:52	"	"	"	"
FED4S-2	"	14:54	"	"	"	"
FED4D-2	"	14:56	"	"	"	"
FED5S-2	"	14:57	"	"	"	"
FED5D-2	"	14:58	"	"	"	"
FED6S-2	"	14:59	"	"	"	"
FED6D-2	"	15:01	"	"	"	"
Blind Field Duplicate	NA	NA	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: OBG.	9/7/95	20:55	Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

djb/wpC

September 4, 1995

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O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: TEDD FISKE
(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-3	9/1/95	15:45	Water	Grab	1	Dye
FED1D-3		15:46				
FED2S-3		15:49				
FED2D-3		15:51				
FED3S-3		15:53				
FED3D-3		15:54				
FED4S-3		15:57				
FED4D-3		15:58				
FED5S-3		16:00				
FED5D-3		16:02				
FED6S-3		16:04				
FED6D-3		16:07				
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: OBG	9/1/95	20:35	Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

djb/wpC

September 4, 1995

320990

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: (Signature) Ted D Fiske

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-4	9/1/95	16:46	Water	Grab	1	Dye
FED1D-4	"	16:48	"	"	"	"
FED2S-4	"	16:50	"	"	"	"
FED2D-4	"	16:52	"	"	"	"
FED3S-4	"	16:54	"	"	"	"
FED3D-4	"	16:56	"	"	"	"
FED4S-4	"	16:58	"	"	"	"
FED4D-4	"	17:00	"	"	"	"
FED5S-4	"	17:04	"	"	"	"
FED5D-4	"	17:05	"	"	"	"
FED6S-4	"	17:07	"	"	"	"
FED6D-4	"	17:10	"	"	"	"
Blind Field Duplicate	"	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: [signature] of: OBG	9/1/95	20:55	Received by: ___ of: ___		
Relinquished by: ___ of: ___			Received by: ___ of: ___		
Relinquished by: ___ of: ___			Received by: ___ of: ___		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: ___ of: ___			Courier Name: ___ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: ___ of: ___			Received by: ___ of: ___		

djb/wpC

September 4, 1995

320991

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: Todd Estes
(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-5	9/7/95	17:45	Water	Grab	1	Dye
FED1D-5		17:48				
FED2S-5		17:50				
FED2D-5		17:51				
FED3S-5		17:52				
FED3D-5		17:54				
FED4S-5		17:55				
FED4D-5		17:56				
FED5S-5		17:58				
FED5D-5		18:00				
FED6S-5		18:02				
FED6D-5		18:06				
Blind Field Duplicate		—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: OBG	9/7/95	20:55	Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

djb/wpC

September 4, 1995

320992

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.186.652
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: (Signature) Todd Fisse

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-6	9/1/95	18:47	Water	Grab	1	Dye
FED1D-6		18:50				
FED2S-6		18:53				
FED2D-6		18:55				
FED3S-6		18:57				
FED3D-6		18:58				
FED4S-6		19:00				
FED4D-6		19:02				
FED5S-6		19:04				
FED5D-6		19:05				
FED6S-6		19:07				
FED6D-6		19:09				
Blind Field Duplicate		—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: OBG	9/1/95	20:55	Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

djb/wpC

September 4, 1995

320993

Job No. 612.198.352
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: Skip Williams
(Signature) Skip Williams

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
HRM 197.0S-1	10/3	08:30	Water	Grab	1	Dye
HRM 197.0S-2		09:20				
HRM 197.0S-3		10:35				
HRM 197.0S-4		11:20				
HRM 197.0S-5		12:15				
HRM 197.0S-6		13:15				
HRM 197.0 D-1		08:30				
HRM 197.0 D-2		09:20				
HRM 197.0 D-3		10:35				
HRM 197.0 D-4		11:20				
HRM 197.0 D-5		12:15				
HRM 197.0 D-6		13:15				
HRM 197.0 DUP 1		—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Skip Williams of: O'Brien & Gere Operations	10/3	18:35	Received by: William Ayling of: O'Brien & Gere Eng.	10/3/95	18:35
Relinquished by: William Ayling of: O'Brien & Gere Eng.	10/4/95	6:05	Received by: Pamela A Kleyn of: O'Brien & Gere Eng.	10/4/95	6:05
Relinquished by: of:			Received by: of:		
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September 29, 1995

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Job No. 612.198.352
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**	COLLECTED BY: William Ayling, Dick Lybinski, James Fearon (Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-1	10/3/95	1003	Water	Grab	1	Dye
0041D-1		1007				
0042S-1		1009				
0042D-1		1010				
0043S-1		1013				
0043D-1	10/3/95	1015				
0044S-1		1021				
0044D-1		1023				
0045S-1		1028				
0045D-1		1029				
0046S-1		1032				
0046D-1	10/3/95	1034				
Blind Field Duplicate	—	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
William Ayling, O'Brien & Gere	10/4/95	6:05	Pamela A Allyn, O'Brien & Gere	10/4/95	6:05
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time

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September 29, 1995

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Job No. 612.198.352
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: William Ayling, Dick Zabinski, James Fonseca
(Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-2	10/3/95	1102	Water	Grab	1	Dye
0041D-2		1103				
0042S-2		1108				
0042D-2		1109				
0043S-2		1111				
0043D-2	10/3/95	1113				
0044S-2		1123				
0044D-2		1124				
0045S-2		1130				
0045D-2		1131				
0046S-2		1151				
0046D-2		1152				
Blind Field Duplicate	10/3/95	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Engr.	10/4/95	6:05	Received by: Pamela Tolman of: O'Brien & Gere Engr.	10/4/95	6:05
Relinquished by: ____ of: ____			Received by: ____ of: ____		
Relinquished by: ____ of: ____			Received by: ____ of: ____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: ____ of: ____			Courier Name: ____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: ____ of: ____			Received by: ____ of: ____		

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September 29, 1995

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Job No. 612.198.352
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: W. Ayling, R Rybinski, J. Frazee
(Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-3	10/3/95	1205	Water	Grab	1	Dye
0041D-3		1207				
0042S-3		1211				
0042D-3		1213				
0043S-3		1216				
0043D-3	10/3/95	1217				
0044S-3		1221				
0044D-3		1222				
0045S-3		1230				
0045D-3		1231				
0046S-3		1236				
0046D-3		1238				
Blind Field Duplicate	10/3/95	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng.	10/4/95	1:05	Received by: Pamela DeLuzan of: O'Brien & Gere Eng.	10/4/95	2:05
Relinquished by: ___ of: ___			Received by: ___ of: ___		
Relinquished by: ___ of: ___			Received by: ___ of: ___		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: ___ of: ___			Courier Name: ___ *Attach delivery/courier receipt to Chain of Custody		
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Job No. 612.198.352
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: W. Ayling, R. Rybinski, J Forsell
(Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-4	10/3/95	1302	Water	Grab	1	Dye
0041D-4		1303				
0042S-4		1307				
0042D-4		1308				
0043S-4		1313				
0043D-4	10/3/95	1314				
0044S-4		139				
0044D-4		1321				
0045S-4		1327				
0045D-4		1328				
0046S-4		1332				
0046D-4	10/3/95	1333				
Blind Field Duplicate	—	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling			Received by: Pamela J Filipini		
of: O'Brien & Gere Engr	10/4/95	6:15	of: O'Brien & Gere, Inc.	10/4/95	16:05
Relinquished by:			Received by:		
of:			of:		
Relinquished by:			Received by:		
of:			of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:			Courier Name:		
of:			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:			Received by:		
of:			of:		

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September 29, 1995

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Job No. 612.198.352
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: W. Ayling, Z Rybinski, J Forsell
(Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-5	10/3/95	1402	Water	Grab	1	Dye
0041D-5		1403				
0042S-5		1406				
0042D-5		1408				
0043S-5		1411				
0043D-5	10/3/95	1412				
0044S-5		1415				
0044D-5		1417				
0045S-5		1422				
0045D-5		1424				
0046S-5		1426				
0046D-5		1427				
Blind Field Duplicate	10/3/95	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng.	10/4/95	5:05	Received by: Pamela J Degan of: O'Brien & Gere Engrs.	10/4/95	5:05
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
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Job No. 612.198.352
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: W. Ayling, T. Eybusk, J. Forsell
(Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
0041S-6	10/3/95	1458	Water	Grab	1	Dye
0041D-6		1459				
0042S-6		1501				
0042D-6		1502				
0043S-6		1503				
0043D-6	10/3/95	1504				
0044S-6		1509				
0044D-6		1511				
0045S-6		1515				
0045D-6		1516				
0046S-6		1518				
0046D-6		1519				
Blind Field Duplicate	10/3/95	—				

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere Eng.	10/4/95	6:05	Received by: Pamela Kellyann of: O'Brien & Gere Eng.	10/4/95	6:05
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
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Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY: (Signature)			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-1	8/3/95	~~10:20~~ 11:20	Water	Grab	1	Dye
FED1D-1	"	~~10:20~~ 11:20	"	"	"	"
FED2S-1	"	11:25	"	"	"	"
FED2D-1	"	11:25	"	"	"	"
FED3S-1	"	11:29	"	"	"	"
FED3D-1	"	11:29	"	"	"	"
FED4S-1	"	11:33	"	"	"	"
FED4D-1	"	11:33	"	"	"	"
FED5S-1	"	11:36	"	"	"	"
FED5D-1	"	11:36	"	"	"	"
FED6S-1	"	11:30	"	"	"	"
FED6D-1	"	11:30	"	"	"	"
Blind Field Duplicate	"		"	"	"	"

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____	Date	Time	Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time

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September 29, 1995

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Job No. 612.198.352
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY:
(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-2	10/3/95	12:25	Water	Grab	1	Dye
FED1D-2	"	12:25	"	"	"	"
FED2S-2	"	12:29	"	"	"	"
FED2D-2	"	12:29	"	"	"	"
FED3S-2	"	12:34	"	"	"	"
FED3D-2	"	12:34	"	"	"	"
FED4S-2	"	12:39	"	"	"	"
FED4D-2	"	12:39	"	"	"	"
FED5S-2	"	12:44	"	"	"	"
FED5D-2	"	12:44	"	"	"	"
FED6S-2	"	12:47	"	"	"	"
FED6D-2	"	12:47	"	"	"	"
Blind Field Duplicate	↓		↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

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September 29, 1995

321002

Job No. 612.198.352
Sheet ____ of ____

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY: (Signature)			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-3	10/13/95	13:23	Water	Grab	1	Dye
FED1D-3	"	13:23	"	"	"	"
FED2S-3	"	13:29	"	"	"	"
FED2D-3	"	13:29	"	"	"	"
FED3S-3	"	13:33	"	"	"	"
FED3D-3	"	13:33	"	"	"	"
FED4S-3	"	13:37	"	"	"	"
FED4D-3	"	13:37	"	"	"	"
FED5S-3	"	13:41	"	"	"	"
FED5D-3	"	13:41	"	"	"	"
FED6S-3	"	13:45	"	"	"	"
FED6D-3	"	13:45	"	"	"	"
Blind Field Duplicate	"	—	"	"	"	"

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: / *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time

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September 29, 1995

321003

Job No. 612.198.352
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY:
(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-4	10/3/95	14:22	Water	Grab	1	Dye
FED1D-4		14:22				
FED2S-4		14:26				
FED2D-4		14:26				
FED3S-4		14:30				
FED3D-4		14:30				
FED4S-4		14:36				
FED4D-4		14:36				
FED5S-4		14:41				
FED5D-4		14:41				
FED6S-4		14:47				
FED6D-4		14:47				
Blind Field Duplicate						

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: / *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time

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September 29, 1995

321004

Job No. 612.198.352
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY: (Signature)			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-5	10/3/95	15:26	Water	Grab	1	Dye
FED1D-5	"	15:26	"	"	"	"
FED2S-5	"	15:30	"	"	"	"
FED2D-5	"	15:30	"	"	"	"
FED3S-5	"	15:33	"	"	"	"
FED3D-5	"	15:33	"	"	"	"
FED4S-5	"	15:37	"	"	"	"
FED4D-5	"	15:37	"	"	"	"
FED5S-5	"	15:41	"	"	"	"
FED5D-5	"	15:41	"	"	"	"
FED6S-5	"	15:46	"	"	"	"
FED6D-5	"	15:46	"	"	"	"
Blind Field Duplicate	✓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____	Date	Time	Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time

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September 29, 1995

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Job No. 612.198.352
Sheet ___ of ___

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY: (Signature)			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
FED1S-6	10/3/95	16:22	Water	Grab	1	Dye
FED1D-6		16:22				
FED2S-6		16:26				
FED2D-6		16:26				
FED3S-6		16:30				
FED3D-6		16:30				
FED4S-6		16:34				
FED4D-6		16:34				
FED5S-6		16:38				
FED5D-6		16:38				
FED6S-6		16:45				
FED6D-6		16:45				
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____	Date	Time	Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: _____ of: _____	Date	Time	Received by: _____ of: _____	Date	Time

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Job No. 612.198.352
Sheet 1 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric** LOCATION: **Hudson River**			COLLECTED BY: MARK D. LaRUE (Signature) Mark D. LaRue			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S-1	10/4/95	16:10	Water	Grab	1	Dye
TIP1D-1	"	16:07	"	"	"	"
TIP2S-1	"	16:16	"	"	"	"
TIP2D-1	"	16:14	"	"	"	"
TIP3S-1	"	16:9	"	"	"	"
TIP3D-1	"	16:18	"	"	"	"
TIP4S-1	"	16:24	"	"	"	"
TIP4D-1	"	16:23	"	"	"	"
TIP5S-1	"	16:28	"	"	"	"
TIP5D-1	"	16:27	"	"	"	"
TIP6S-1	"	16:35	"	"	"	"
TIP6D-1	"	16:33	"	"	"	"
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Mark D. LaRue of: O'Brien & Gere Engineers	10/5/95	13:30	Received by: Kerry Thurston of: OBrien Gere Engineers	10/5/95	13:30
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: _____ of: _____			Courier Name: _____ *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____ of: _____			Received by: _____ of: _____		

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Job No. 612.198.352
Sheet 2 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: MARK D. LaRUE
(Signature) Mark D. LaRue

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S-2	10/4/95	17:11	Water	Grab	1	Dye
TIP1D-2	"	17:10	"	"	"	"
TIP2S-2	"	17:14	"	"	"	"
TIP2D-2	"	17:13	"	"	"	"
TIP3S-2	"	17:17	"	"	"	"
TIP3D-2	"	17:16	"	"	"	"
TIP4S-2	"	17:21	"	"	"	"
TIP4D-2	"	17:20	"	"	"	"
TIP5S-2	"	17:27	"	"	"	"
TIP5D-2	"	17:24	"	"	"	"
TIP6S-2	"	17:32	"	"	"	"
TIP6D-2	"	17:31	"	"	"	"
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Mark D. LaRue of: O'Brien & Gere Engineers	10/5/95	13:30	Received by: Kerry Thurston of: O'Brien & Gere Engineers	10/5/95	13:30
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
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djb/612.198

September 29, 1995

321008

Job No. 612.198.352
Sheet 3 of 6a

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: MARK D. LaRUE
(Signature) Mark D. LaRue

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S-3	10/4/95	18:02	Water	Grab	1	Dye
TIP1D-3	"	18:00	"	"	"	"
TIP2S-3	"	18:06	"	"	"	"
TIP2D-3	"	18:04	"	"	"	"
TIP3S-3	"	18:10	"	"	"	"
TIP3D-3	"	18:08	"	"	"	"
TIP4S-3	"	18:13	"	"	"	"
TIP4D-3	"	18:12	"	"	"	"
TIP5S-3	"	18:17	"	"	"	"
TIP5D-3	"	18:15	"	"	"	"
TIP6S-3	"	18:20	"	"	"	"
TIP6D-3	"	18:20	"	"	"	"
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Mark D. LaRue of: O'Brien & Gere Engineers	10/5/95	13:30	Received by: Kerry Thurston of: OBrien Gere Engineers	10/5/95	13:30
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:			Courier Name: *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: of:			Received by: of:		

djb/612.198

September 29, 1995

321009

Job No. 612.198.352
Sheet 4 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: MARK D. LARUE
(Signature) Mark D. LaRue

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S-4	10/4/95	19:27	Water	Grab	1	Dye
TIP1D-4	"	19:25	"	"	"	"
TIP2S-4	"	19:36	"	"	"	"
TIP2D-4	"	19:34	"	"	"	"
TIP3S-4	"	19:40	"	"	"	"
TIP3D-4	"	19:38	"	"	"	"
TIP4S-4	"	19:42	"	"	"	"
TIP4D-4	"	19:43	"	"	"	"
TIP5S-4	"	19:49	"	"	"	"
TIP5D-4	"	19:46	"	"	"	"
TIP6S-4	"	19:52	"	"	"	"
TIP6D-4	"	19:51	"	"	"	"
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Mark D. LaRue			Received by: Kerry Thurston		
of: O'Brien & Gere Engineers	10/5/95	13:30	of: OBrien & Gere Eng.	10/5/95	13:30
Relinquished by:			Received by:		
of:			of:		
Relinquished by:			Received by:		
of:			of:		
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of:			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:			Received by:		
of:			of:		

djb/612.198

September 29, 1995

321010

Job No. 612.198.352
Sheet 5 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**
LOCATION: **Hudson River**

COLLECTED BY: MARK D. LaRUE
(Signature) Mark D. LaRue

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S-5	10/4/95	19:58	Water	Grab	1	Dye
TIP1D-5	"	19:57	"	"	"	"
TIP2S-5	"	20:03	"	"	"	"
TIP2D-5	"	20:02	"	"	"	"
TIP3S-5	"	20:06	"	"	"	"
TIP3D-5	"	20:05	"	"	"	"
TIP4S-5	"	20:10	"	"	"	"
TIP4D-5	"	20:07	"	"	"	"
TIP5S-5	"	20:15	"	"	"	"
TIP5D-5	"	20:13	"	"	"	"
TIP6S-5	"	20:18	"	"	"	"
TIP6D-5	"	20:17	"	"	"	"
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: Mark D. LaRue of: O'Brien & Gere Engineers	10/5/95	13:30	Received by: Kemp Thurston of: OBrien + Gere Eng.	10/5/95	13:30
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:			Courier Name: *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: of:			Received by: of:		

djb/612.198

September 29, 1995

321011

Job No. 612.198.352
Sheet 6 of 6

Office: Syracuse
Address: 5000 Brittonfield Parkway, Syracuse, NY 13221
Phone: (315) 437-6100

CHAIN OF CUSTODY

CLIENT: **General Electric**	COLLECTED BY: MARK D. LaRUE
LOCATION: **Hudson River**	(Signature) Mark D. LaRue

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
TIP1S-6	10/4/95	20:25	Water	Grab	1	Dye
TIP1D-6		20:23				
TIP2S-6		20:28				
TIP2D-6		20:27				
TIP3S-6		20:33				
TIP3D-6		20:31				
TIP4S-6		20:36				
TIP4D-6		20:34				
TIP5S-6		20:39				
TIP5D-6		20:37				
TIP6S-6		20:44				
TIP6D-6		20:42				
Blind Field Duplicate	↓	—	↓	↓	↓	↓

[1] Matrix = water, wastewater, air, sludge, sediment, etc. [2] Type = grab, composite

Relinquished by:	Date	Time	Received by:	Date	Time
Mark D. LaRue			Kerry Thurston		
of: O'Brien & Gere Engineers	10/5/95	13:30	of: O'Brien & Gere Engineers	10/6/95	13:30
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:	Date	Time	Courier Name:	Date	Time
of:			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:	Date	Time	Received by:	Date	Time
of:			of:		

djb/612.198

September 29, 1995

321012

APPENDIX E

FIELD LOGS

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

HRM 197.0 Sample Field Log: Rounds 1-6

Sample I.D.	Date	Time	Sample Type		Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot			
HRM 197.0S-1	9/7/95	10:15 A	Comp	Comp.	8.5'	Center of river	
HRM 197.0D-1							
HRM 197.0S-2		11:15					
HRM 197.0D-2							
HRM 197.0S-3		12:15					
HRM 197.0D-3							
HRM 197.0S-4		13:15					
HRM 197.0D-4							
HRM 197.0S-5		14:15					
HRM 197.0D-5							
HRM 197.0S-6		15:50					
HRM 197.0D-6							

Water temperature: 21°c
Weather data:
Air temperature _____
Wind: light
Precipitation: none.

Sampled by:
Team Leader: Skip Williams
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321014

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect CC Field Log: Round 1

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	~~Velocity (ft/sec) Approx. Distance from West Shore~~	Comments
(near west shore) CC1S-1	9/7/95	12:02	–	–	–	1.0' @ 12:01		Int. tide sampling @ 0.78 ppb dye. Dye injection started @ 10:30 am.
CC1D-1	"	12:05	–	–	–			River level dropping. Site of injection
CC2S-1	"	12:10	–	–	–			of dye injection. 1250 fluorometer moved downstream.
CC2D-1	"	12:12	–	–	–			12:27 changing conditions
CC3S-1	"	1245	–	–	–			Stage @ inflatable pipe is 6" lower than @ 9:30. Water on inflatable is 3 down to
CC3D-1	"	12:17	✓	✓	✓			Trickle, may stop at 3 pm over bellow
CC4S-1	"	12:21	✓	–	–			SLIGHT SHEEN VISIBLE OCCASIONALLY
CC4D-1	"	12:24	–	–	–			
CC4D-1dup	"	12:24	–	–	–			COC: HRdup1
CC5S-1	"	12:29	–	–	–			
CC5D-1	"	12:30	–	–	–			
(near east shore) CC6S-1		12:34	–	–	–			
CC6D-1		12:35	–	–	–			
CC EQBL		16:33	–					

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Halbritter
Crew #2: Ralph Morse
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321015

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect CC Field Log: Round 2

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) CC1S-2	9/7/95	13:05				11" @ 13:03		
CC1D-2	"	13:07						
CC2S-2	"	13:09						
CC2D-2	"	13:11						
CC3S-2	"	13:13						
CC3D-2	"	13:15						
CC4S-2	"	13:20						
CC4D-2	"	13:22						
CC4D-2dup	"	13:23						COC: HRdup1 Dye Dup-1 (Ecaap)
CC5S-2	"	13:28						
CC5D-2	"	13:30						
(near east shore) CC6S-2	"	13:33						
CC6D-2	"	13:36						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes: 13:16 water levels have risen since initiation of Round 2.

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Halbrittter
Crew #2: Ralph Morse
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321016

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect CC Field Log: Round 3

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) CC1S-3	9/7/95	14:09				18" @ 14:08		
CC1D-3	"	14:11						
CC2S-3	"	14:16						
CC2D-3	"	14:17						
CC3S-3	"	14:20						
CC3D-3	"	14:22						
CC4S-3	"	14:24						Dye Dup 2 (CCDUP2)
CC4D-3	"	14:26						
CC4D-3dup	"	14:26						COC: HRdup1
CC5S-3	"	14:32						
CC5D-3	"	14:34						
(near east shore) CC6S-3	"	14:42						
CC6D-3	"	14:45						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes: 14:36 Rodeat drifting downstream - Reeled East Shore & Back on Rope by 14:41

14:43 Hooked in Pam, Dye @ PTSD leveled off @ 0.9 ppb

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Halbritter
Crew #2: Ralph Morse
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321017

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect CC Field Log: Round 4

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Approx. Distance from West Shore	Comments
(near west shore) CC1S-4	9/7/95	15:06				18" @ 15:03		Dye Dup 3 (CCDup3)
CC1D-4		15:08						
CC2S-4		15:10						
CC2D-4		15:11						
CC3S-4		15:15						
CC3D-4		15:17						
CC4S-4		15:19						
CC4D-4		15:20						
CC4D-4dup		15:20						COC: HRdup1
CC5S-4		15:25						
CC5D-4		15:27 Recm						
(near east shore) CC6S-4		15:29						
CC6D-4	↓	15:31						
~~CC2MS-4~~ NA								
~~CC1Sdup-4~~ NA								

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Halbritter
Crew #2: Ralph Inorse
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321018

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect CC Field Log: Round 5

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) CC1S-5	9/7/95	16:03				18" @ 16:01		
CC1D-5		16:04						
CC2S-5		16:06						
CC2D-5		16:08						CC2D-5 CCDup Dye.
CC3S-5		16:10						
CC3D-5		16:11						
CC4S-5		16:13						
CC4D-5		16:15						
CC4D-5dup		16:15						COC: HRdup1
CC5S-5		16:18						
CC5D-5		16:20						
(near east shore) CC6S-5		16:22						
CC6D-5		16:23						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Halbrifter
Crew #2: Ralph Morse
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321019

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect CC Field Log: Round 6

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) CC1S-6	9/7/95	17:02	–	–	–	18" @ 17:00		
CC1D-6		17:03	–	–	–			
CC2S-6		17:05	–	–	–			
CC2D-6		17:07	–	–	–			
CC3S-6		17:09	–	–	–			
CC3D-6		17:11	–	–	–			
CC4S-6		17:12	–	–	–			
CC4D-6		17:14	–	–	–			
CC4D-6dup		17:14	–	–	–			COC: HRdup1
CC5S-6		17:18	–	–	–			
CC5D-6		17:19	–	–	–			
(near east shore) CC6S-6		17:20	–	–	–			
CC6D-6		17:22	–	–	–			

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Halbritter
Crew #2: Ralph Morse
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321020

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect 004 Field Log: Round 1

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-1	9/7/95	1219	1	1	2	2,3		0041S-1 Dye Dup
0041S-1MS		1219	1	—	—	2.3		sampled by boat
0041D-1		1223	1	1	1	2.3		
0042S-1		1229	1	1	1	1.8		sampled while standing
0042D-1		1231	1	1	1	1.8		
0042D-1dup		1231	1	1	—	1.8		COC: HRdup2
0043S-1		1235	1	1	1	0.9		sampled while standing
0043D-1		1237	1	1	1	0.9		
0044S-1		1240	1	1	1	1.1		sampled while standing
0044D-1		1243	1	1	1	1.1		
0045S-1		1248	1	1	1	2.1		sampled while standing
0045D-1		1251	1	1	1	2.5 (M)		
(near east shore) 0046S-1		1254	1	1	1	1.2		
0046D-1	9/7/95	1256	1	1	1	1.2		sampled while standing
004 EQBL	9/7/95	09:13	✓	—	—	N/A	N/A	

Water temperature: _____
Weather data:
Air temperature: Low 80's - overcast
Wind: moderate to
Precipitation: None

321021

Notes: sampled shallow depths w/ small SS- beaker
Sampled deep w/ SS Kemmerer on a side angle

waded across from Loc 2-6

Sampled by:
Team Leader: WA Ayling
Crew #1: SE Mooney
Crew #2: JM Forsell
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect 004 Field Log: Round 2

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-2	9/7/95	1317	1	1	1	2.3'		sampled by boat
0041S-2MS		1317	1	—	—	2.3'		
0041D-2		1320	1	1	1	2.3'		
0042S-2		1323	1	1	1	0.9'		sampled while standing
0042D-2		1325	1	1	1	0.9'		
0042D-2dup		1325	1	1	—	0.9'		COC: HRdup2
0043S-2		1330	1	1	1	1.2'		sampled while standing
0043D-2		1331	1	1	2	1.2'		0043D-2 Dye Dup
0044S-2		1335	1	1	1	1.5'		Sampled while standing
0044D-2		1336	1	1	1	1.5'		
0045S-2		1341	1	1	1	1.3'		sampled while standing
0045D-2		1343	1	1	1	1.3'		
(near east shore) 0046S-2	↓	1347	1	1	1	1.8'		sampled while standing
0046D-2	9/7/95	1348	1	1	1	1.8'		

Water temperature: _____
Weather data:
Air temperature Low 80's - overcast
Wind: slight
Precipitation: None

321022

Notes: same sampling equipment used as in Round-1

waded across from Loc 2-6

Sampled by:
Team Leader: WA Ayling
Crew #1: SE Mooney
Crew #2: JM Forsell
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect 004 Field Log: Round 3

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-3	9/7/95	1405	1	1	1	3.0'		Sampled from Boat 15:00 ⇒ 2.4 fps **
0041S-3MS		1415	1	—	—	3.0'		
0041D-3		1418	1	1	1	3.0'		
0042S-3		1422	1	1	1	2.6'		14:58 ⇒ 1.2 fps
0042D-3		1424	1	1	1	2.6'		sampled from Boat
0042D-3dup		1424	1	1	[illegible]	2.6'		COC: HRdup2
0043S-3		1425	1	1	1	1.8'		14:55 ⇒ 1.2 fps
0043D-3		1430	1	1	1	1.8'		Sampled from Boat.
0044S-3		1432	1	1	1	1.9'		14:53 ⇒ 2.1 fps
0044D-3		1433	1	1	1	1.9'		Sampled while Standing
0045S-3		1437	1	1	1	2.6'		14:49 ⇒ 3.1 fps **
0045D-3		1440	1	1	2	2.6'		Boat Sampled 0045D-3 Dye Dup
(near east shore) 0046S-3	↓	1442	1	1	1	2.0'		14:47 ⇒ 3.1 fps
0046D-3	9/7/95	1444	1	1	1	2.0		sampled while standing

Water temperature: _____
Weather data:
Air temperature Low 80's - overcast
Wind: slight
Precipitation: None -

Notes:- Flow increased since previous round.
- Could usually see increased flow
- Same sampling eqmt used as Round 1 & 2.

** flow measurement taken from boat
other flows taken from wading staff on bottom

Sampled by:
Team Leader: WA Ayling
Crew #1: SE Mooney
Crew #2: JM Forsell
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321023

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect 004 Field Log: Round 4

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-4	9/7/95	1518	1	1	1	3.2		sampled from Boat
0041S-4MS		1518	1	—	—	3.2		
0041D-4		1520	1	1	1	3.2		
0042S-4		1522	1	1	1	2.6		Sampled from Boat
0042D-4		1524	1	1	1	2.6		
0042D-4dup		1524	1	1	(M) —	2.6		COC: HRdup2
0043S-4		1526	1	1	1	2.9		Sampled from Boat
0043D-4		1528	1	1	1	2.9		
0044S-4		1529	1	1	1	2.1		Sampled from standby
0044D-4		1532	1	1	1	2.1		
0045S-4		1535	1	1	1	2.6		Boat Sampled
0045D-4		1537	1	1	1	2.6		
(near east shore) 0046S-4	↓	1539	1	1	1	2.9		Sampled from standby
0046D-4	9/7/95	1541	1	1	1	2.9		

Water temperature: _____
Weather data:
Air temperature 80's - Overcast
Wind: slight
Precipitation: None - 0

Notes: Same sampling equipment used
wade from Loc 374

Sampled by:
Team Leader: WA Ayling
Crew #1: SE Mooney
Crew #2: JM Farrell
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321024

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect 004 Field Log: Round 5

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Approx. Distance from West Shore	Comments
(near west shore) 0041S-5	9/7/95	1616	1	1	1	3.2'		Boat sample
0041S-5MS		1618	1	—	—	3.2'		
0041D-5		1618	1	1	1	3.2		
0042S-5		1620	1	1	1	2.6		Boat sample
0042D-5		1622	1	1	1	2.6		
0042D-5dup		1622	1	1	—	2.6		COC: HRdup2
0043S-5		1624	1	1	1	1.8		Boat sample
0043D-5		1626	1	1	1	1.8		
0044S-5		1629	1	1	1	2.0		Stand sample
0044D-5		1631	1	1	1	2.0		
0045S-5		1644	1	1	1	2.6		Boat sample
0045D-5		1646	1	1	1	2.6		
(near east shore) 0046S-5	↓	1648	1	1	1	2.0		Stand sample
0046D-5	9/7/95	1649	1	1	1	2.0		

Water temperature: _____
Weather data:
Air temperature low 60's
Wind: very slight
Precipitation: None - overcast!

Notes: Same sampling equipment

Sampled by:
Team Leader: WA Ayling
Crew #1: SE Mooney
Crew #2: JM Fosell
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321025

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect 004 Field Log: Round 6

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-6	9/7/95	1715	1	1	1	3.0		Sample By boat
0041S-6MS		1715	1	—	—	3.0		
0041D-6		1716	1	1	1	3.0		
0042S-6		1718	1	1	1	2.6		Standing
0042D-6		1720	1	1	1	2.6		
0042D-6dup		1720	1	1	—	2.6		COC: HRdup2
0043S-6		1725	1	1	1	1.7		standing
0043D-6		1726	1	1	1	1.7		
0044S-6		1731	1	1	1	1.9		standing
0044D-6		1732	1	1	1	1.9		
0045S-6		1738	1	1	1	2.2		standing
0045D-6		1739	1	1	1	2.2		
(near east shore) 0046S-6	↓	1743	1	1	1	1.9		0046S-6 Dye Dup
0046D-6	9/7/95	1744	1	1	1	1.9		standing

Water temperature: _____
Weather data:
Air temperature Low 80's
Wind: Very slight
Precipitation: Mon - Overcast

Notes: Delay between locations because installing buoys.
* Flow appeared to drop some during this round

Sampled by:
Team Leader: WA Ayling
Crew #1: SE Mooney
Crew #2: JM Fogel
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321026

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect FED Field Log: Round 1

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Approx. Distance from West Shore	Comments	FLOW VELOCITY
(near west shore) FED1S-1	9-7-95	13:45	Composite	Composite	Grab	1.8'			
FED1S-1dup		13:47						COC: HRdup3	
FED1D-1		13:46							
FED2S-1		13:48				1.9'			
FED2D-1		13:49							
FED3S-1		13:51				1.3'			
FED3D-1		13:52							
FED4S-1		13:54				1.5'			
FED4D-1		13:56							
FED5S-1		13:58				1.2'			
FED5D-1		14:00							
(near east shore) FED6S-1		14:02				2.3'			
FED6S-1MS		14:03							
FED6D-1		14:04							
FED EQBL									

STA #
1/2
1
1 1/2
2
2 1/2
3
3 1/2
4
4 1/2
5
5 1/2
6
6 1/2

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: EG Hausamann
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321027

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect FED Field Log: Round 2

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-2	9-7-95	14:45				2.2		
FED1S-2dup		14:45						COC: HRdup3
FED1D-2		14:46						
FED2S-2		14:48				2.2		
FED2D-2		14:49						
FED3S-2		14:50				1.7		
FED3D-2		14:52						
FED4S-2		14:54				1.8		
FED4D-2		14:56						
FED5S-2		14:57				1.6		
FED5D-2		14:58						
(near east shore) FED6S-2		14:59				2.4		
FED6S-2MS		15:00						
FED6D-2		15:01						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: EG Hausamann
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321028

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect FED Field Log: Round 3

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-3	9-7-95	15:45				2.3		
FED1S-3dup		15:45						COC: HRdup3
FED1D-3		15:46						COC: blind duplicate here for dye
FED2S-3		15:49				2.4		
FED2D-3		15:51						
FED3S-3		15:53				1.7		
FED3D-3		15:54						
FED4S-3		15:57				1.8		
FED4D-3		15:58						
FED5S-3		16:00				1.5		
FED5D-3		16:02						
(near east shore) FED6S-3		16:04				2.5		
FED6S-3MS		16:05						
FED6D-3	↓	16:07						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: EG Hausamann
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers

(WAA:djb/52:GE-9/95)

321029

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect FED Field Log: Round 4

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Approx. Distance from West Shore	Comments	Flow Velocity ft/sec.
(near west shore) FED1S-4	9-7-95	16:46				2.3'			2.10 ft/sec
FED1S-4dup		16:48						COC: HRdup3	
FED1D-4		16:48						[illegible]	
FED2S-4		16:50				2.4'			1.6 ft/sec.
FED2D-4		16:52							
FED3S-4		16:54				1.8'			1.8 ft/sec.
FED3D-4		16:56							
FED4S-4		16:58				1.8'			1.7 ft/sec.
FED4D-4		17:00							
FED5S-4		17:04				1.6'		blind duplicate here (dye)	1.9 ft/s
FED5D-4		17:05							
(near east shore) FED6S-4		17:07				2.4'		[illegible]	2.0 ft/sec
FED6S-4MS		17:09							
FED6D-4	↓	17:10							

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: EG Hausamann
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321030

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect FED Field Log: Round 5

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-5	9-7-95	17:45			+	2.3'		
FED1S-5dup		17:46						COC: HRdup3
FED1D-5		17:48						
FED2S-5		17:50			+	2.2'		
FED2D-5		17:51						
FED3S-5		17:52			+	1.6'		blind duplicate here (dye)
FED3D-5		17:54						
FED4S-5		17:55			+	1.7'		
FED4D-5		17:56						
FED5S-5		17:58			+	1.5'		
FED5D-5		18:00						
(near east shore) FED6S-5		18:02			+	2.4'		
FED6S-5MS		18:04						
FED6D-5	↓	18:06						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: EG Hausamann
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321031

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 1 - SEPTEMBER 1995

FILE: 612.186

Transect FED Field Log: Round 6

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Approx. Distance from West Shore	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-6	9-7-95	18:47			+	2.1		
FED1S-6dup		18:49						COC: HRdup3
FED1D-6		18:50						
FED2S-6		18:53			+	2.1		
FED2D-6		18:55						
FED3S-6		18:57			+	2.6		
FED3D-6		18:58						
FED4S-6		19:00			+	1.6		
FED4D-6		19:02						blind duplicate time for dye
FED5S-6		19:04			+	1.4'		
FED5D-6		19:05						
(near east shore) FED6S-6		19:07			+	2.3'		
FED6S-6MS		19:08						
FED6D-6	↓	19:09						
EB		18:53						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: EG Hausamann
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:GE-9/95)

321032

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO.
GE/HR Project / Dye Study	1	JRR	9/8/95	

Staff gage → 747-9900

DATE	TIME	Staff Gage
Fri. 9/8/95	5:15 AM	
	5:45	
	6:08	20.58
	7:04	20.82
	9:30 A	20.88
	12:10	21.11
	1:20	21.15
	2:05	21.13
	3:30	21.12

TTP Pool Location	Transect Time	Water Depth
Sta 4	7:00 am	5.3 feet
Sta 3	7:10 am	10.4
2	7:15	3.0
1	7:20	6.1
5		
6		

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO.
Dye Conc. (TIP)				

9/8/95

	Location	Time	Dye Conc.
	Bouy 204	5:45 Am	0.310
	Bouy 197	5:55 am	0.83
	~~Bouy~~	6:02 am	
S	Tip Griffin Island	6:02 am	0.50
TIP	Transect #6	6:20	0.02
	"	6:30	0.067
	" #5	6:40	0.096
	#4	6:55	0.152
	#3	7:05	0.158
	Bouy 189	8:50	0.80
	Transect #5	9:03	0.45
	"	9:10	0.47
		9:20	0.47
		9:30	0.50
		9:45	0.54
		9:50	0.56
		10:05	0.60
	▶	10:22	0.62
	Tip #1 Sta Sample	10:35	0.46
	station 2	10:45	0.53
	3	10:40	0.71
	4	11:00	0.73
	5	11:05	0.71
	6	11:10	0.70
	1	11:35	0.61
	2	11:40	0.65
	3	11:45	0.76
	4	11:55	0.76
	5	12:00	0.74
	6	12:05	0.72
	1	12:40	0.73
	2	12:50	0.73
	3	12:55	0.68
	4	1:00	0.65

Loc	T.	Conc
#5	1:10	0.63
#6	1:20	0.62
#1	1:35	0.70
#2	1:45	0.69
#3	1:50	0.57
#4	1:55	0.55
#5	2:00	0.55
#6	2:05	0.55
#1	2:45	0.61
#2	2:50	0.50
#3	2:55	0.47
#4	3:00	0.46
#5	3:05	0.46
#1	3:35	0.53
2	3:40	0.50
#3	2:45	0.36
#4	3:50	0.37
#5	3.55	0.35
#6	4:00	0.35

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO.
TIP Velocity Reads				

9/8/95

Location	Time	Reading (ft/sec)
6	6:30	0.4
4.5	6:	No Reading
4	7:00	0.2
3	7:08	0.5
2	7:15	0.2
1	7:20	0.3

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY/CHK	DATE	JOB NO.
River Monitoring Test	1/3	BRR/MDL MAM/JSH	9/8/95	

THOMPSON ISLAND POOL

STATION	ROUND	TIME	WATER DEPTH	COMMENTS
1S	1	10:30	6.4	
	2	~~10:45~~ 11:10	~~6.2~~ 6.3	
	3	12:40	~~6.2~~ 6.1	
	4	1:35	5.2	Dye Drop
	5	2:45	6.7	
	6	3.35	6.0	
1D	1	10:30	6.4	~~Dye Drop~~
	2	~~10:45~~ 11:35	~~6.2~~ 6.3	Floc. Part.
	3	12:40	~~6.2~~ 6.1	
	4	1:35	5.2	
	5	2:45	6.7	
	6	3.35	6.0	
2S	1	10:45	~~6.2~~ 6.2	Floc, Part
	2	11:40	6.4	Dye Drop - Floc
	3	12:50	6.2	
	4	1:45	6.1	
	5	2:50	6.2	
	6	3:40	6.1	
2D	1	10:45	~~6.2~~ 6.2	Floc, Part
	2	11:40	6.4	Floc, Part
	3	12:50	6.2	
	4	1:45	6.1	
	5	2:50	6.2	
	6	3:40	6.1	

321036

O'BRIEN & GERE
ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO.
River Monitoring Test	2/3	JRE/MDC WASHTON	9/8/95	

Thompson Island Pool

STATION	ROUND	TIME	WATER DEPTH	COMMENTS
3S	1	10:55	9.8	
	2	11:45	9.6	
	3	12:55	10.6	
	4	1:50	9.9	
	5	2:55	10.6	
	6	3:45	10.4	
3D	1	10:55	9.8	D.P
	2	11:45	9.6	
	3	12.55	10.6	
	4	1.50	7.9	
	5	2.55	10.6	
	6	3:45	10.4	
4S	1	11:00	6.5	
	2	11:55	6.8	
	3	1:00 pm	7.2	
	4	1:55	7.2	
	5	3:00	7.2	
	6	3:50	7.0	
4D	1	11:00	6.5	Pos Dup location
	2	11:55	6.8	
	3	1:00 Pm	7.2	
	4	1:55	7.2	
	5	300	7.2	
	6	3:50	7.0	

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO.
River Monitoring Test	3/3		9/8/95	

Thompson Island Pool

STATION	ROUND	TIME	WATER DEPTH	COMMENTS
5S	1	11:05	8.7	
	2	~~12:10~~ 12:00	9.0	
	3	~~12:55~~ 1:10	9.3	
	4	2:00	9.4	
	5	3:05	9.2	
	6	3:55	9.5	
5D	1	11:05	8.7	
	2	12:00	9.0	
	3	~~12:55~~ 1:10	9.3	
	4	2:00	9.4	
	5	3:05	9.2	
	6	3:55	9.5	
6S	1	11:10	10.0	
	2	12:05	10.2	
	3	1:20	~~10.0~~ 10.3	
	4	2:05	10.0	
	5			
	6	4:00	10.5	
6D	1	11:10	10.0	
	2	12:05	10.2	
	3	1:20	~~10.0~~ 10.3	
	4	2:05	10.0	
	5			Dye Dep.
	6	4:05	10.5	

10/3/95

CANOE CARRY 10:30 AM 14:30

STATION	VELOCITY	
6.5	1.2	2.9
6.0	2.6	3.4
5.5	2.5	—
5.0	4.2	—
4.5	3.3	5.0
4.0	2.4	3.2
3.5	1.3	1.8
3.0	0.8	1.4
2.5	0.0	0.6
2.0	1.6	2.2
1.5	0.8	0.5
1.0	0.4	0.7
0.5	0.5	0.4

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO.
GE - HR DYE TESTING	1	JT	9/7/95	

• DYE FEED SOL'N 0.5 % = 1.25 gal IN 50 gal HR WATER (2 BATCHES OF 50 gal @

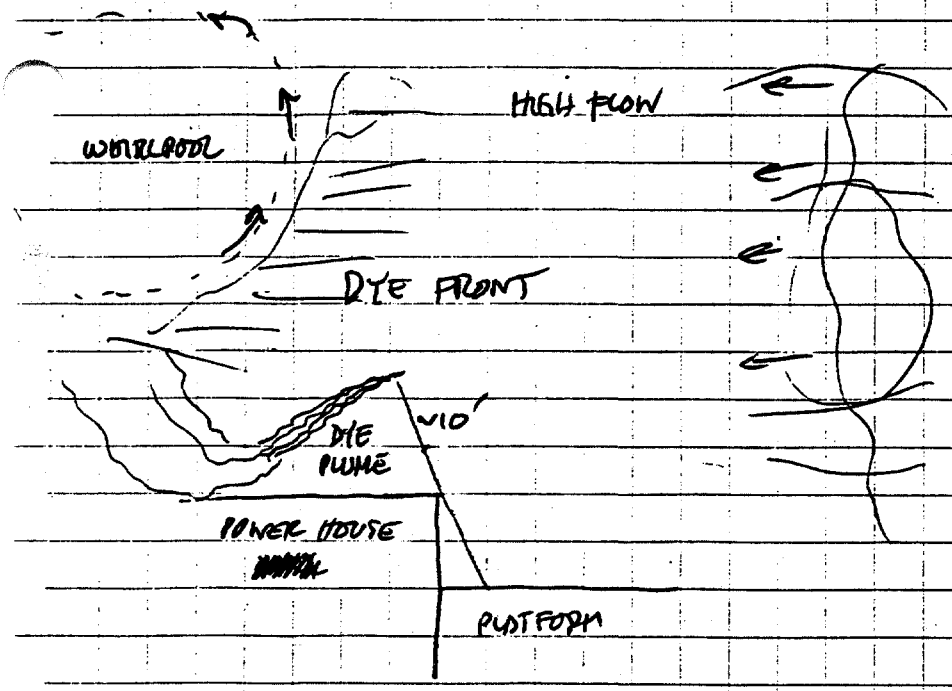
• MIX > 30 min

• STORED INJECTION 1030 FEED RATE 1020 ml/min

1100	DYE CONC AT CANDE CARRY	0.15 ppb
1105	"	0.28 "
1107		0.37 "
1115		0.45 "
1126		0.60 "
1145		0.80 "

PICTURES #1 - 11 ~ 5 min
#23-24 - 1200A

1130 DYE PLUME ✓ VISUALLY OBSERVED ACROSS THE RIVER (PLUM E-BANK TO W-BA
~1205 WATER LEVEL STOPPED 4-5" AT THE INJ POINT
1215 EXTENDED THE INJ-LIN OUT 6'
1305 LEVEL CAME UP SLIGHTLY (~1")
1320 LEVEL CAME BACK TO NORMAL
1330 SWITCHED DRUM BETTER MIXING PATTERN AT THE END OF INJ-PIPE (THE END OF THE PIPE SUBMERGED



• 1450 PLUM FLYING STATION DYE 0.9 ppb

• STOPPED INJECTION 1700

• LEFT SITE 1750

Event 1 - Dye Injection Field Notes

1010 - DYE	1030 ml/min LEVEL	20.94 - 2249 cfs.	
1100	1030	21.05	
1130	1030	21.06	
1200	—	21.02	
1230	1030	20.78	
1300	—	20.71	
1330	1030	20.56	
1400	—	20.78	
1430	1040	20.91	
1500	1050	21.12	
1530	1020	21.14	
1600	1020	21.13	
1630	—	21.13	
	1010		

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

HRM 197.0 Sample Field Log: Rounds 1-6

Sample I.D.	Date	Time	Sample Type		Approximate Water Depth	Velocity (ft^2/sec)	Comments
			PCB aliquot	TSS aliquot			
HRM 197.0S-1		08:30	Comp	Comp	7.5'		
HRM 197.0S-2		09:20	↓	↓			
HRM 197.0S-3		10:35					
HRM 197.0S-4		11:20					
HRM 197.0S-5		12:15					
HRM 197.0S-6		13:15					
~~HRM 197.0 DUP~~ 1 SW		~~11:20~~ SW					

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Sampled by:
Team Leader: ***Skip Williams***

O'Brien & Gere Engineers
(WAA:djb/52:fldlog)

321042

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect CC Field Log: Round 1

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft³/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) CC1S-1	10/3/95	10:04	✓	✓	N.A.	1.6' @ 10:03		
CC1S-1dup	"	"	✓	✓		—		COC: HRdup1
CC1D-1	10/3/95	10:08	✓	✓		—		
CC2S-1		10:11	✓	✓		—		
CC2D-1		10:13	✓	✓		—		
CC3S-1		10:16	✓	✓		—		
CC3D-1		10:18	✓	✓		—		
CC4S-1		10:22	✓	✓		—		
CC4D-1		10:21	✓	✓		—		
CC5S-1		10:27	✓	✓		—		
CC5D-1		10:26	✓	✓		—		
(near east shore) CC6S-1		10:31	✓	✓		—		
CC6D-1	↓	10:29	✓	✓	↓	—		
CC EQBL	10/3/95	@ 9:24	✓	✓	N.A.	—		

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes: 9:34 Dye Injected @ 9:30

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Hallaciffe
Crew #2: Ralph Moore
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect CC Field Log: Round 2

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) CC1S-2	10/3/95	11:05	✓	✓	N.A.	1.4@11:40	station .5 0.5	
CC1S-2dup		"	✓	✓			1.0 0.4	COC: HRdup1
CC1D-2		11:04	✓	✓			1.5 0.2	
CC2S-2		11:09	✓	✓			2.0 1.6	
CC2D-2		11:08	✓	✓			2.5 0.0	
CC3S-2		11:12	✓	✓			3.0 0.8	
CC3D-2		11:11	✓	✓			3.5 1.3	
CC4S-2		11:16					4.0 2.4	
CC4D-2		11:15	✓	✓			4.5 3.3	
CC5S-2		11:19					5.0 4.2	
CC5D-2		11:18	✓	✓			5.5 2.5	
(near east shore) CC6S-2		11:23		✓			6.0 2.6	
CC6D-2	↓	11:22		✓	↓		6.5 = 1.2	
							Time = 11:30	

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Halbritter
Crew #2: Ralph Inverse
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect CC Field Log: Round 3

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) CC1S-3	10/3/95	12:01	✓	✓	N.A.	1.3 @ 11:58		
CC1S-3dup		11	–	–				COC: HRdup1
CC1D-3		11:59	–	–				
CC2S-3		12:05	–	–				
CC2D-3		12:04	–	–				
CC3S-3		12:09	–	–				
CC3D-3		12:08						
CC4S-3		12:13	–	✓				
CC4D-3		12:12	–	✓				
CC5S-3		12:20	✓	✓				
CC5D-3		12:19	✓	–				
(near east shore) CC6S-3		12:23	✓	✓				
CC6D-3		12:22	✓	✓				

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Holbrite
Crew #2: Ralph Nurse
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect CC Field Log: Round 4

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) CC1S-4	10/3/95	13:02	✓	✓	N.A.	1-2@13:00		
CC1S-4dup		13:02						COC: HRdup1
CC1D-4		13:01						
CC2S-4		13:07						
CC2D-4		13:06						
CC3S-4		13:11						
CC3D-4		13:10						
CC4S-4		13:15						
CC4D-4		13:14						
CC5S-4		13:18						
CC5D-4		13:17						
(near east shore) CC6S-4		13:22						
CC6D-4	↓	13:21	↓	↓				
~~CC2MS-4~~ RSM 10/3/95 per MDLaRue.								
~~CC1Sdup-4~~ RSM 10/3/95 per MDLaRue					↓			

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Hallcitter
Crew #2: Ralph Inverse
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect CC Field Log: Round 5

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) CC1S-5	10/3/95	14:02	—	✓		1.7 @ 14:00	Station 0.5 0.4	
CC1S-5dup		14:02	—	—		1.8 @ 14:35	1 0.7	COC: HRdup1
CC1D-5		14:01					1.5 0.5	
CC2S-5		14:07					2 2.2	
CC2D-5		14:06					2.5 0.6	
CC3S-5		14:10					3 1.4	
CC3D-5		14:09					3.5 1.8	
CC4S-5		14:14					4 3.2	
CC4D-5		14:13					4.5 5.0	
CC5S-5		14:17					5 —	
CC5D-5		14:16					5.5 —	
(near east shore) CC6S-5		14:24					6. 3.4	
CC6D-5		14:22					6.5 2.9	
							@ 14:30	

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: B.G Halbrite
Crew #2: Ralph Morse
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect CC Field Log: Round 6

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) CC1S-6	10/3/95	15:03	✓	✓	NA	1.9 15:00		
CC1S-6dup		15:03						COC: HRdup1
CC1D-6		15:02						
CC2S-6		15:07						
CC2D-6		15:06						
CC3S-6		15:09						
CC3D-6		15:08						
CC4S-6		15:13						
CC4D-6		15:12						
CC5S-6		15:18						
CC5D-6		15:16 Rlm						
(near east shore) CC6S-6		15:22 Rlm						
CC6D-6	↓	15:20	↓	↓	↓			

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: Bob Habrika
Crew #2: Ralph Inman
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect 004 Field Log: Round 1

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) 0041S-1	10/3/95	10:03	1	1	1	—	—	sampled from boat
0041D-1		10:07	1	1	1	3.1	—	
0042S-1		10:09	1	1	1	~~2.3~~	—	sampled from boat
0042D-1		10:10	1	1	1	2.2	—	
0043S-1		10:13	1	1	1	—	—	
0043S-1MS	↓	10:13	1	—	—	—	—	sampled from river
0043D-1	10/3/95	10:15	1	1	1	1.5	—	
0044S-1		10:21	1	1	1	—	—	sampled from river
0044D-1		10:23	1	1	1	1.7	—	
0044D-1dup		10:23	1	1	—	1.7	—	COC: HRdup2
0045S-1		10:26	1	1	1	—	—	sampled from boat
0045D-1		10:29	1	1	1	2.3	—	
(near east shore) 0046S-1	↓	10:32	1	1	1	—	—	sampled from river
0046D-1	10/3/95	10:34	1	1	1	1.5	—	
004 EQBL	10/3/95	7:56	1	—	—	—	—	

Water temperature: 17°C
Weather data:
Air temperature: mid 60's - 70
Wind: None
Precipitation: Clear

321049

Notes:
False pos: Bubbles in Line
9:32
9:33
9:34
9:35
9:36

0.7 @ station 6
max 0.68 station 5
max 0.64 between 3 & 4
max 0.6 @ station 3
0 @ station 2, then 0.4

9:40 0 @ station 5
9:41 0 between stations 5 & 6
9:42 No Bubbles -0.4
9:43 2.6 ~20' from east shore
9:44 Decreased to 0 @ Location 5
0 from Location 5 to West Shore

Sampled by:
Team Leader: WA Ayling
Crew #1: Dick Rybinski
Crew #2: Janet Forsell
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect 004 Field Log: Round 2

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft^2/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-2	10/3/95	1102	1	1	1	-	-	sampled from boat
0041D-2		1103	1	1	2	2.6	3.3	Dye Dup
0042S-2		1108	1	1	1	-	-	
0042D-2		1109	1	1	1	2.1	2.0	sampled from boat
0043S-2		11:11	1	1	1	-	-	
0043S-2MS		11:11	1	-	-	-	-	sampled from river
0043D-2	10/3/95	1113	1	1	1	1.3	1.5	
0044S-2		11:23	1	1	1	-	-	sampled from river
0044D-2		1124	1	1	1	1.6	1.5	
0044D-2dup		1124	1	1	-	-	-	COC: HRdup2
0045S-2		1130	1	1	1	-	-	sampled from river
0045D-2		1131	1	1	1	2.1	4.0	
(near east shore) 0046S-2		1151	1	1	1	-	-	Trouble moving from 5 to 6
0046D-2	10/3/95	1152	1	1	1	1.3	3.0	sampled from river

Water temperature: _____
Weather data:
Air temperature mid 60's - 70
Wind: None
Precipitation: clear

Notes: Global water flow meter # RRGL01 used
* small stone glued to propeller of flow meter assume it's for balance
Noticable Drop in flow based on difficulty motoring across

Sampled by:
Team Leader: WA Ayling
Crew #1: Dick Rybinski
Crew #2: Janet Forsell
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect 004 Field Log: Round 3

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) 0041S-3	10/3/95	1205	1	1	1	~~2.2~~ (1)	—	Sampled from river
0041D-3		1207	1	1	1	2.2	2.5	
0042S-3		1211	1	1	1	—	—	Sampled from river
0042D-3		1213	1	1	1	1.8	1.5	
0043S-3		1216	1	1	1	—	—	sampled from river
0043S-3MS	↓	1216	1	—	—	—	—	
0043D-3	10/3/95	1217	1	1	1	1.1	1.5	
0044S-3		1221	1	1	1	—	—	sampled from river
0044D-3		1222	1	1	1	1.35	0 In eddy	Dye Dup
0044D-3dup		1222	1	1	1	—	—	COC: HRdup2
0045S-3		1230	1	1	1	—	—	Sampled from river
0045D-3		1231	1	1	1	1.4	4.0	
(near east shore) 0046S-3	↓	1236	1	1	1	—	—	Sampled from river
0046D-3	10/3/95	1238	1	1	1	1.1	2.5	

Water temperature: _____
Weather data:
Air temperature mid 60's - 70
Wind: None
Precipitation: Clear

Notes:

Sampled by:
Team Leader: WA Ayling
Crew #1: Dick Rybinski
Crew #2: Janet Fessell
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect 004 Field Log: Round 4

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft^2/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-4	10/3/95	1302	1	1	1	—	—	Sampled from river
0041D-4		1303	1	1	1	2.1	2.5	
0042S-4		1307	1	1	1	—	—	sampled from river
0042D-4		1308	1	1	1	1.65	1.5	
0043S-4		1313	1	1	1	—	—	
0043S-4MS		1313	1	—	—	0.95	1.0	sampled from river
0043D-4	10/3/95	1314	1	1	1	↓	↓	
0044S-4		1319	1	1	1	—	—	
0044D-4		1321	1	1	1	1.35	0 - In eddy	sampled from river
0044D-4dup		1321	1	1	—	—	—	COC: HRdup2
0045S-4		1327	1	1	1	—	—	from river
0045D-4		1328	1	1	1	1.85	4.0	
(near east shore) 0046S-4		1332	1	1	1	—	—	from river
0046D-4	10/3/95	1333	1	1	1	1.1	2.0	

Water temperature: _____
Weather data:
Air temperature mid-60's-70
Wind: None
Precipitation: Clear

321052

Notes:

Sampled by:
Team Leader: WA Ayling
Crew #1: Dikk Rybinski
Crew #2: Janet Forsell
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect 004 Field Log: Round 5

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) 0041S-5	10/3/95	1402	1	1	1	–	–	sampled from river
0041D-5		1403	1	1	1	2.7	–	
0042S-5		1406	1	1	2	–	–	Dye Dup
0042D-5		1408	1	1	1	2.0	–	sampled from river
0043S-5		1411	1	1	1	–	–	
0043S-5MS		1411	1	–	–	–	–	sampled from river
0043D-5	10/3/95	1412	1	1	1	1.5	–	
0044S-5		1415	1	1	1	–	–	sampled from River
0044D-5		1417	1	1	1	1.85	–	
0044D-5dup		1417	1	1	–	–	–	COC: HRdup2
0045S-5		1422	1	1	1	2.3	–	sampl from boat
0045D-5		1424	1	1	1	–	–	
(near east shore) 0046S-5		1426	1	1	1	1.7	–	sampled from boat
0046D-5	10/3/95	1427	1	1	1	–	–	

Water temperature: _____
Weather data:
Air temperature mid 60-70
Wind: None
Precipitation: Clear

Notes: Noticable flow increase during this round

Sampled by:
Team Leader: WA Ayling
Crew #1: Dick Rybinski
Crew #2: Janet Forsell
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect 004 Field Log: Round 6

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) 0041S-6	10/3/95	1458	1	1	1	–	–	sampled from boat
0041D-6		1459	1	1	1	2.6	–	
0042S-6		1501	1	1	1	–	–	sampled from boat
0042D-6		1502	1	1	1	2.5	–	
0043S-6		1503	1	1	1	–	–	
0043S-6MS		1504 (M)	1	–	–	~~1.7~~ (M)	–	sampled from boat
0043D-6	10/3/95	1504	1	1	1	1.7	–	
0044S-6		1509	1	1	1	–	–	sampled from boat
0044D-6		1511	1	1	1	1.9	–	
0044D-6dup		1511	1	1	–	–	–	COC: HRdup2
0045S-6		1515	1	1	1	–	–	sampled from boat
0045D-6		1516	1	1	1	2.5	–	
(near east shore) 0046S-6		1518	1	1	2	–	–	Dye Dup
0046D-6	10/3/95	1519	1	1	1	1.6	–	sampled from boat

Water temperature: _____
Weather data:
Air temperature mid 60's-70
Wind: None
Precipitation: Clear

321054

Notes: Dye visable ~ 1/2 between west shore and station #6. Decreased width of dye w/ higher flow. Increased width of dye w/ lower flow

Sampled by:
Team Leader: WA Ayling
Crew #1: Dick Rybinski
Crew #2: Janet Forsell
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect FED Field Log: Round 1

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft^2/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-1	10/3/95	11:20				1.9		
FED1S-1MS	10/3/95	11:20				~~2.0~~		COC: HRdup3
FED1D-1	10/3/95	11:20						
FED2S-1	10/3/95	11:25				2.0		
FED2D-1	10/3/95	11:25						
FED3S-1	10/3/95	11:29				1.4		
FED3S-1dup	10/3/95	11:29						COC: HRdup3
FED3D-1	10/3/95	11:29						
FED4S-1	10/3/95	11:33				1.5		
FED4D-1	10/3/95	11:33						
FED5S-1	10/3/95	11:36				1.5		
FED5D-1	10/3/95	11:36						
(near east shore) FED6S-1	10/3/95	11:36				2.0		
FED6D-1	10/3/95	11:36						
FED EQBL	10/3/95	~~10:03~~ 10:03						

Water temperature: 61°

Weather data:
- Air temperature: 70°+
- Wind: 5
- Precipitation: NONE

Notes:

Sampled by:
- Team Leader: TED FISKE
- Crew #1: JIM MOORE
- Crew #2: PAM FLYNN

O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect FED Field Log: Round 2

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) FED1S-2	10/3/95	12:25				.8		WATER DEPTH BETWEEN WESTSHORE & BUOY #1
FED1S-2MS		12:25						" BUOY 1&2
FED1D-2		12:25						
FED2S-2		12:29				2.1		BETWEEN 1 & 2
FED2D-2		12:29						
FED3S-2		12:34				1.5		BETWEEN 2 & 3
FED3S-2dup		12:34						COC: HRdup3
FED3D-2		12:34						3 & 4 WATER DEPTH
FED4S-2		12:39				1.3		
FED4D-2		12:39						
FED5S-2		12:44				1.5		4 & 5
FED5D-2		12:44						
(near east shore) FED6S-2		12:47				1.8		5 & 6
FED6D-2	↓	12:47				2.2		6 to EAST SHORE (SIDE)

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: JEDD FISKE
Crew #1: JIM MOORE
Crew #2: PAM FLYNN
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect FED Field Log: Round 3

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft^2/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-3	10/3/95	*1200 12:23						
FED1S-3MS		"						
FED1D-3		"						
FED2S-3		12:29						
FED2D-3		"						
FED3S-3		12:33						
FED3S-3dup		"						COC: HRdup3
FED3D-3		"						
FED4S-3		12:37						
FED4D-3		"						
FED5S-3		12:41						
FED5D-3		"						
(near east shore) FED6S-3		12:45						
FED6D-3	↓	*12:45						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes: * TIME STARTED ROUND AT 1:23 TODD FISH
FINISHED ROUND AT 1:45

Sampled by:
Team Leader: TODD FISH
Crew #1: JIM MOORE
Crew #2: PAM FLYNN
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321057

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect FED Field Log: Round 4

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft^2/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-4	10/3/95	2:22				2.1	2.5	
FED1S-4MS		2:22				—	—	
FED1D-4		2:22				—	—	
FED2S-4		2:26				2.0	2.0	
FED2D-4		2:26				—	—	
FED3S-4		2:30				1.3	1.5	
FED3S-4dup		2:30				—	—	COC: HRdup3
FED3D-4		2:30				—	—	
FED4S-4		2:36				1.4	1.5	
FED4D-4		2:36				—	—	
FED5S-4		2:41				1.7	3.0	
FED5D-4		2:41				—	—	
(near east shore) FED6S-4		2:47				1.7	2.5	
FED6D-4	↓	2:47				—	—	

Water temperature: 18°C
Weather data:
Air temperature _____
Wind: light
Precipitation: none

Notes: water level up since Round 3

Sampled by:
Team Leader: TODD FISEL
Crew #1: KERRY THURSTON
Crew #2: PAM FLYNN
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321058

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect FED Field Log: Round 5

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-5	10/3/95	3:26						
FED1S-5MS		↓						
FED1D-5		↓						
FED2S-5		3:30						
FED2D-5		↓						
FED3S-5		3:33						
FED3S-5dup		↓						COC: HRdup3
FED3D-5		↓						
FED4S-5		3:37						
FED4D-5		↓						
FED5S-5		3:41						
FED5D-5		↓						
(near east shore) FED6S-5		3:46						
FED6D-5	↓	↓						

Water temperature: 18°C
Weather data:
Air temperature _____
Wind: none
Precipitation: none

Notes: Water level a flow's come up since Round 4

Sampled by:
Team Leader: TODD FISKE
Crew #1: KERRY THURSTON
Crew #2: PAM FLYNN
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321059

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect FED Field Log: Round 6

Station I.D.	Date	Time	Sample Type			Approximate Water Depth	Water Velocity (ft²/sec)	Comments
			PCB aliquot	TSS aliquot	Dye grab			
(near west shore) FED1S-6	10/3/95	4:22						
FED1S-6MS		"						
FED1D-6		"						
FED2S-6		4:26						
FED2D-6		"						
FED3S-6		4:30						
FED3S-6dup		"						COC: HRdup3
FED3D-6		"						
FED4S-6		4:34						
FED4D-6		"						
FED5S-6		4:38						
FED5D-6		4:38						
(near east shore) FED6S-6		1:45						
FED6D-6	↓	4:45						

Water temperature: 18°C
Weather data:
Air temperature _____
Wind: light to nine
Precipitation: none

Notes: Flow dropped since Rnd 5

Sampled by:
Team Leader: TODD FISKE
Crew #1: KERRY THURSTON
Crew #2: PAM FLYNN
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321060

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect TIP Field Log: Round 1

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft^2/sec)	Comments
(near west shore) TIP1S-1	10/4/95	(MDL) 10 16:07	✓	✓	✓ 0.18	6.6'		
TIP1D-1		16:07						
TIP2S-1		16:16			0.20	6.1		
TIP2D-1		16:14						
TIP3S-1		16:19			0.22	10.2		
TIP3D-1		16:18						
TIP4S-1		16:24				6.65		
TIP4D-1		16:23						DVE Dup.
TIP5S-1		16:28				9.15		
TIP5D-1		16:27						
TIP6D-1dup (5 (MDL))		16:27						COC: HRdup4
(near east shore) TIP6S-1		16:35	↓	↓		10.75		
TIP6D-1		16:33	↓	↓				
TIP EQBL	↓	16:00	✓	✓	—			

Water temperature: 16°C
Weather data:
Air temperature ≈60°F
Wind: S - 5 mph
Precipitation: LIGHT RAIN

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: TEE TONG-NGOEK
Crew #2: TED FISIK
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321061

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect TIP Field Log: Round 2

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) TIP1S-2	10/4/95	17:11	✓	✓	✓ 0.42	6.7		(SEAWEED) FLUOROMETER INTAKE PLUGGED
TIP1D-2		17:10						
TIP2S-2		17:14				6.4		
TIP2D-2		17:13						
TIP3S-2		17:17				10.2		
TIP3D-2		17:16						
TIP4S-2		17:21				6.7		
TIP4D-2		17:20						
TIP5S-2		17:27				9.0		DYE DUP.
TIP5D-2		17:24						
TIP5D-2dup		17:24						COC: HRdup4
(near east shore) TIP6S-2		17:32			0.6	11.2		
TIP6D-2	↓	17:31	↓	↓				

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: _____
Crew #2: _____

O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect TIP Field Log: Round 3

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) TIP1S-3	10/4/95	18:02	✓	✓	✓ 0.59 ✓	6.55	—	STA 0.5 = (NO READING)
TIP1D-3		18:00					0.1	STA 1.5 = 0.2 VEL
TIP2S-3		18:06				6.2	0.1	STA 2.5 = 0.3 VEL
TIP2D-3		18:04						
TIP3S-3		18:10				10.15	0.4	STA 3.5 = 0.7 VEL
TIP3D-3		18:08						
TIP4S-3		18:13				6.8	0.5	STA 4.5 = 0.5 VEL
TIP4D-3		18:12						
TIP5S-3		18:17				9.0		
TIP5D-3		18:15					0.5	STA. 5.5 = 0.65 VEL
TIP5D-3dup		18:15						COC: HRdup4
(near east shore) TIP6S-3		18:22				10.3	~~0.9~~ MAL 0.75	STA 6.5 = 0.9 VEL.
TIP6D-3		18:20						

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321063

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect TIP Field Log: Round 4

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft^2/sec)	Comments
(near west shore) TIP1S-4	10/4/95	19:27	✓	✓	✓	5.8		Dye Dup.
TIP1D-4		19:25						
TIP2S-4		19:36				6.3		
TIP2D-4		19:34						
TIP3S-4		19:40				10.4		
TIP3D-4		19:38						
TIP4S-4		19:42				6.9		
TIP4D-4		19:43						
TIP5S-4		19:49				9.15		
TIP5D-4		19:46						
TIP5D-4dup		19:46						COC: HRdup4
(near east shore) TIP6S-4		19:52				8.7		
TIP6D-4	↓	19:51	↓	↓	↓			

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

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GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect TIP Field Log: Round 5

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) TIP1S-5	10/4/95	19:58	✓	✓	✓	6.8		
TIP1D-5		19:57						
TIP2S-5		20:03				6.35		
TIP2D-5		20:02						
TIP3S-5		20:06				10.4		
TIP3D-5		20:05						
TIP4S-5		20:10				6.8		
TIP4D-5		20:09						
TIP5S-5		20:15				9.2		
TIP5D-5		20:13						
TIP5D-5dup		20:13						COC: HRdup4
(near east shore) TIP6S-5		20:18				8.9		
TIP6D-5	↓	20:17	↓	↓	↓			

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321065

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST
EVENT 2 - OCTOBER 1995

FILE: 612.198

Transect TIP Field Log: Round 6

Station I.D.	Date	Time	Sample Type: PCB aliquot	Sample Type: TSS aliquot	Sample Type: Dye grab	Approximate Water Depth	Water Velocity (ft²/sec)	Comments
(near west shore) TIP1S-6	10/4/95	20:25 ~~18:08~~ MDL	✓	✓	~~0.59~~ ✓	6.7 MDL 6.55		
TIP1D-6		20:23 ~~18:00~~ MDL						
TIP2S-6		20:28				~~6.2~~ MDL 5.8		
TIP2D-6		20:27 ~~18:04~~ MDL						DYE Dup.
TIP3S-6		20:33				10.35		
TIP3D-6		20:31						
TIP4S-6		20:36				6.5		
TIP4D-6		20:34						
TIP5S-6		20:39				9.1		
TIP5D-6		20:37						
TIP5D-6dup		20:37						COC: HRdup4
(near east shore) TIP6S-6		20:44				10:35		
TIP6D-6	↓	20:42	↓	↓	↓			

Water temperature: _____
Weather data:
Air temperature _____
Wind: _____
Precipitation: _____

Notes:

Sampled by:
Team Leader: MD LaRue
Crew #1: _____
Crew #2: _____
O'Brien & Gere Engineers
(WAA:djb/52:612.198)

321066

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO.
HRL DYE TESTING #2	1	TT	10/3/95	

INJ. Ø = 21"
SA = 2.41 ft²
VOL = 50 gal
= 6.68 ft³
H = 2.77 ft
= 33.26"

OBS - MIXED DYE = 2.5 gal 20% IN 50 gal WATER

DYE CONC = 1 %

TARGET FLOW = 3,000 cfs, TARGET CONC 1 ppb

DYE FEED RATE = 560 ml OF 1%/min @ 0930

- VERY CALM DAY, CLOUDY (AM) - SUNNY (PM)

1015 - DYE PLUME HUG ALONG E-SHORE ~ 5-10 WIDE (FROM INJ. STATION)

1250 - DYE CONC @ FED - 2 ppb (K. THURSTON)

1255 - CUT DYE FEED RATE BACK TO 510 ml/min

1330 - JRL - MAINTAIN TTE SAME FEED RATE

321067

O'BRIEN & GERE ENGINEERS, INC.

SUBJECT	SHEET	BY	DATE	JOB NO.
IR - DYE TESTING	2	TT	10/3/91	

Time	Water Elevation	CFS	Drum level	Dye Feed rate
9:00	~~21.45~~ 21.35	3349	34"	
9:30	21.52	3838	34"	580 ml/min
10:00	21.12	2707	31 1/4"	580
10:30	21.07	2576	29"	560
11:00	20.96	2298	26"	560
11:30	20.95	2273	23 1/4"	560
12:00	20.88	2103	20 1/2"	560
12:30	20.82	1963	17 3/4"	560
13:00	20.74	1783	15 1/2"	510 ~~OUT~~ DYE BACK ON 1245
13:30	20.63	1552	COULD NOT READ	510
14:00	20.61	1511	≈11 1/2"	510
14:30	20.58	1452	-	510
15:00	21.01	2424	6 1/2"	510
15:30	21.13	2733	4"	510
1600	21.10	2654	-	510
1612	STOPPED DYE INJECTION			

APPENDIX F

DYE ANALYTICAL PROCEDURES AND OPERATIONS

Appendix F: Dye Analytical Procedures and Operations

Laboratory Dye

A Model 111 fluorometer, operated in accordance with the operations manual (GK Turner Associates 1966) was used to analyze dye samples in the laboratory. The instrument was fitted with an ultraviolet light source, and two filters: a primary filter No. 110-832 (wavelength 546 mυ), recommended for tracer work with Rhodamine dye; and a secondary filter No. 110-833 (wavelength 590 mυ), compatible with the primary filter.

Calibration

The calibration of the fluorometer began by zeroing the instrument to a dummy cuvette, which blocked light from the detector. Standards were prepared by diluting 20% Rhodamine WT dye stock solution with Hudson River water. Standard concentrations of 0.2 μg/l, 0.6 μg/l, 1.0 μg/l, 2.0μg/l, 5.0μg/l, 10 μg/l, and 20 μg/l were prepared. A one-point calibration was performed using the 0.6 μg/l standard. Next, the seven standards were analyzed as internal standards to verify calibration and develop a response curve (Figure F-1).

Operation

Prior to sample analysis, the instrument was zeroed to the dummy cuvette and the instrument was calibrated (see above). Samples from the background station were analyzed first after the calibration. This provided information on the reagent blank response. The highest reading background sample was used as the reagent blank, and the instrument was zeroed to this sample to minimize background interference for the remaining samples. The 0.6 μg/l standard was measured again to verify stability. The instrument response and dye concentration of the standard were used to calculate the sample concentration by the formula:

$$C_U = \frac{C_S}{R_S} \times R_U$$

where C_U is the dye concentration of the unknown field sample, C_S the dye concentration of the standard, R_S the instrument response to the dye standard, and R_U the instrument response to the unknown dye concentration of the field sample.

Quality Assurance/Quality Control

Quality was maintained by the analysis of blind duplicate samples collected at each transect. The blind duplicates were collected at a ratio of one duplicate to 18 samples. To check for instrument drift over time, the standard and the reagent blank (a selected background sample) were reanalyzed after each set of transect samples was complete (approximately seventy-two samples).

Data Results

Raw data results from laboratory dye analyses are presented in Attachment 1F of this appendix.

Field Dye

A Model 10 field fluorometer, operated in accordance with the operations manual (Turner Designs), was used in the field for real-time measurements of dye concentrations in the river.

Calibration

Before field use, a one-point calibration was performed using a 1.0μg/l standard prepared by diluting 20% Rhodamine WT dye stock solution with Hudson River water. Following calibration, check standards (0.1 μg/l, 1.0 μg/l and 0.5 μg/l) were used to verify the accuracy of the field instrument. Calibration and check standards were prepared in plastic 5-gallon buckets. The standards were pumped from the buckets, through the instrument and discharged to the buckets to allow the instrument to operate in continuous mode. The instrument and tubing were purged thoroughly between standards. Calibration was verified following field use.

Operation

The field fluorometer was set up for continuous operation. An in-line pump was used to draw water through a hose to the inlet port of the instrument. The end of the inlet hose was submerged in the river. A discharge hose was fastened to the instrument outlet port. The discharge hose was directed away from the inlet hose, either by setting the discharge hose downstream of the inlet, or by setting the discharge hose off the opposite side of the boat. The instrument and the in-line pump were both powered by a 12-volt battery. Sample readings, in μg/l, were recorded with the time in the field notes. The instrument was monitored during operation for interference caused by air bubbles in the continuous feed line. When air bubbles were observed, no readings were taken and adjustments were made to reduce the air bubbles in the feed line.

QA/QC

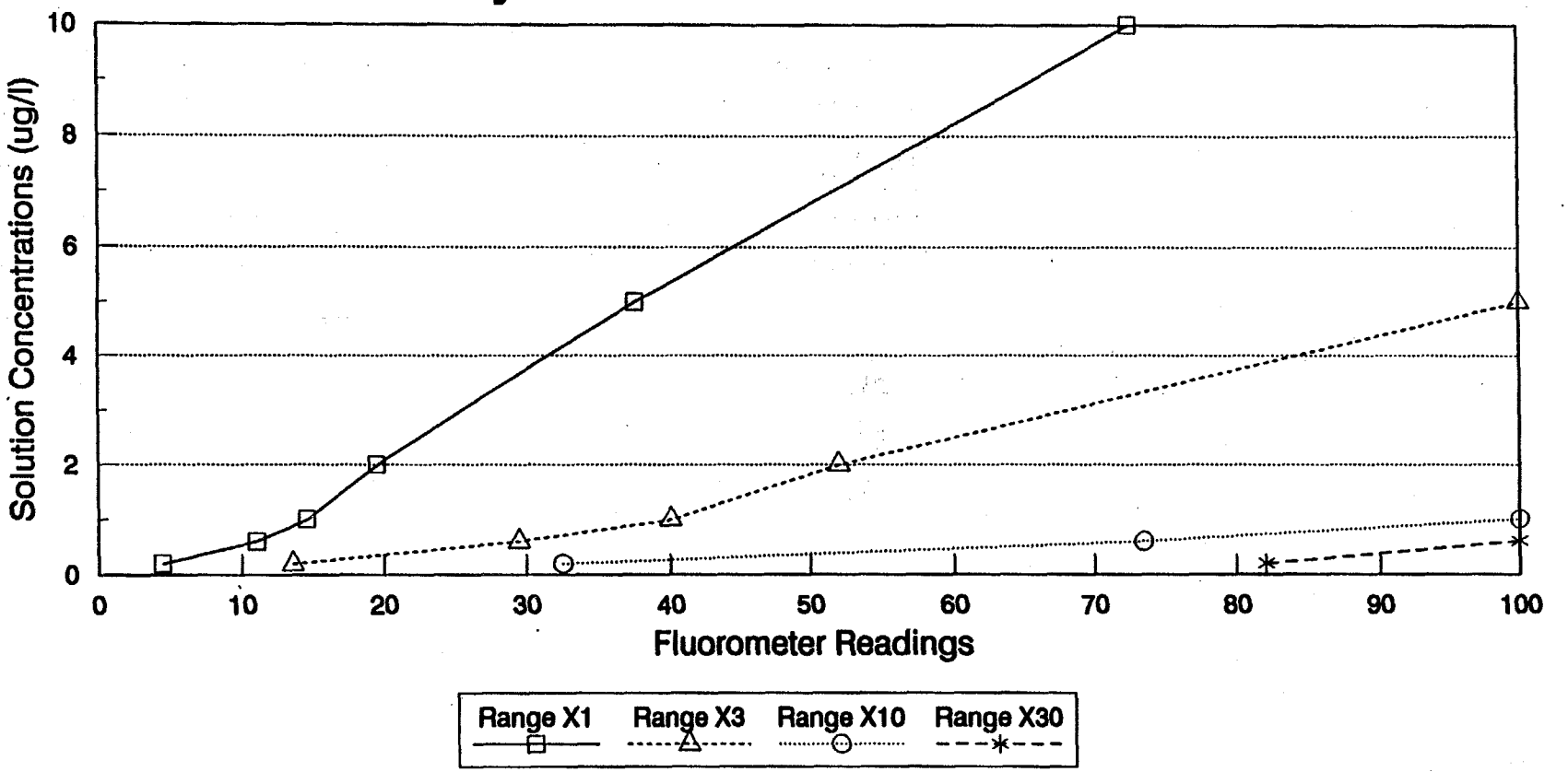
Due to the continuous mode of operation, duplicate analyses were not possible. However, readings observed over time were stable and did not exhibit significant variability. Calibration was verified following field use by re-analyzing the check standards.

Data Results

Results of field dye monitoring for Event 1 at Canoe Carry and Fort Edward are presented in Figure F-2. Field dye monitoring at Thompson Island Pool for Event 1, and monitoring for Event 2 were conducted from the sampling boat. Data obtained from the boat was collected at various locations across the transect. Therefore, the resulting data do not represent the progress of the dye front of a single location.

Figure F-1

General Electric Company
Hudson River Project River Monitoring Test
Laboratory Fluorometer Calibration Curves

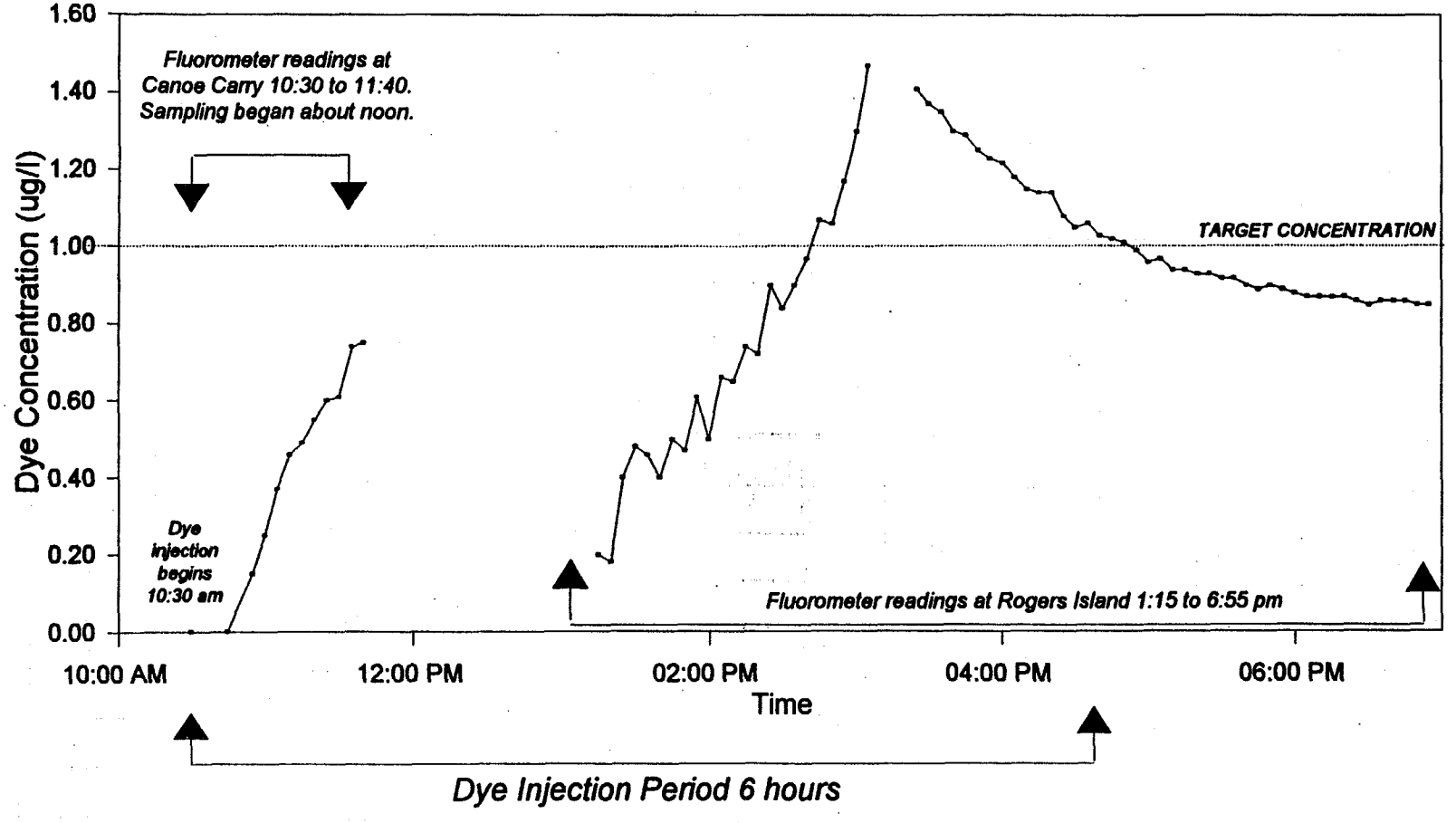


O'Brien & Gere Engineers, Inc.
September 5, 1995
b44:calib3.drw

Note: Calibration solutions comprised of Hudson River water and Rhodamine dye. Range X1 is the least sensitive, Range X30 is the most sensitive. Sensitivity increases with increasing UV light exposure, e.g. Range X1 exposes the sample to less UV light than Range X30. Highest possible fluorometer reading is 100. Estimated concentration of Hudson River water without dye is approximately 0.2 ug/l.

Figure F-2

General Electric Company
Hudson River Project
River Monitoring Test
Field Fluorometer Event 1 Data Summary



B44a:dye.wq1/dye2

321073

Attachment 1F

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST

Dye Sampling Results

Set blank to HRM 197.0 Round 6 @ 0

Std. of 0.6 ug/L: Reading @ start - 19.5
Reading @ end - 19.5

Fluorometer Readings (0-100)

Sample collection date: 9/7/95
Date of analysis: 9/9/95

CC TRANSECT:

Round	CC1S	CC1D	CC2S	CC2D	CC3S	CC3D	CC4S	CC4D	CC5S	CC5D	CC6S	CC6D
1	21	20	20	22	22.5	21.5	22	25.5	30.5	30.5	29	28.5
2	26	26	26.5	29	29	29.5	33	50.5	56	51.5	46	53.5
3	36.5	27	28.5	28	28	29.5	27	32.5	29	29	30	30
4	20	20	23.5	20	22	24	21	22.5	23.5	23	24	25
5	16	15	18	16	16.5	16	18	21	24.5	21.5	24	25
6	16	17.5	16.5	23	16	16.5	17.5	17	19	19.5	19	18.5
	CCdup1	53		CCdup2	27		CCdup3	19.5		CCdup4	18.5	

Set blank to HRM 197.0 Round 6 @ 0

Std. 0.6 ug/L: Reading @ start: 19.0
Reading @ end: 19.5

Sample collection date: 9/7/95
Date of analysis: 9/9/95

004 TRANSECT:

Round	0041S	0041D	0042S	0042D	0043S	0043D	0044S	0044D	0045S	0045D	0046S	0046D
1	22.5	20	20	21	23.5	22	23	22	23	23.5	22.5	23
2	26	24.5	26.5	26.5	29	29	27.5	27	31	31.5	32	32
3	29.5	28	30.5	30	31.5	31.5	31	30.5	32	31.5	32	30
4	21.5	21	23	24	21.5	24	25	24.5	26	25.5	25.5	35
5	22.5	18	19.5	19.5	20	21	20.5	20.5	21	21.5	21.5	21.5
6	20.5	19	18.5	18	19.5	20	20	20.5	20	21	19.5	20
	004dup1	23.5		004dup2	28		004dup3		30	004dup4	19.5	

check blank @ 0
standard 0.6 ug/L: Initial reading: 21.5
Final reading: 22.0

Sample collection date: 7/7/95
Date of analysis: 9/10/95

FED TRANSECT

Round	FED1S	FED1D	FED2S	FED2D	FED3S	FED3D	FED4S	FED4D	FED5S	FED5D	FED6S	FED6D
1	17	18	21	21.5	21.5	24	23	21	20	21	19.5	20
2	31	30.5	38.5	38.5	40.5	43	40	42	38.5	38	37	37
3	28	29.5	29	29	28	28	28	28	31	29	38.5	38
4	22.5	21.5	22.5	22	23	21.5	21.5	22	22.5	23	23	23
5	19.5	19.5	22	20	19.5	20.5	20.5	19.5	23	21.5	22	22
6	18	17	17	15.5	17.5	15	18	14.5	15	15	17	15
	FEDdup1	28		FEDdup2	22		FEDdup3	22.5		FEDdup4	14	

check blank @ 0
standard 0.6 ug/L: Initial reading: 15.5
Final reading: 16.5

Sample collection date: 9/8/95
Date of analysis: 9/11/95

TIP TRANSECT

Round	TIP1S	TIP1D	TIP2S	TIP2D	TIP3S	TIP3D	TIP4S	TIP4D	TIP5S	TIP5D	TIP6S	TIP6D
1	8.5	8.5	9	9	13	11.5	14.5	13	13	12	10.5	11.5
2	11	11	11.5	12.5	13	14	13	14	15	16	12	13.5
3	13.5	13.5	13.5	14	12	12	13	13	12	12	11	11
4	13.5	14	13	13	10	10.5	9.5	10	9.5	10	8.5	10
5	11.5	12	10	12	9	7.5	7.5	7.5	7.5	7.5	13.0	8
6	10.0	10	9.5	11.5	6	11.5	7.5	5	5.5	5.5	5.5	5
	TIPdup1	12		TIPdup2	12		TIPdup3	16		TIPdup4	12.5	

321076

1 ml. for Readings (0-100)

Sample collection date: 9/7/95
Date of analysis: 9/9/95

HRM 197.0 BACKGROUND

only have 1 set

Round	HRM 197.0S	HRM 197.0D
1	8.5	
2	8.0	
3	7.5	
4	8.5	
5	9.0	
*6	10.5	

*used for reagent blank.

To measure background:

1. Zeroed fluometer w/ blank cuvette
2. measured std 0.6 ug/L (reading of .30)
3. Measure background samples
4. Use highest background sample as reagent blank for remaining stations & recalibrate instrument. This allows for removal of interference from blank river water.
5. Recheck standard of 0.6 ug/L (reads 19.5) Use 19.5 value in calculations for next transect.
6. Recheck std. between transects and adjust value. Keep appropriate in spreadsheets.

321077

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT - RIVER MONITORING TEST

FILE: 612.186

Dye Sampling Results

Sample collection date: No dye collected
Date of analysis: at CC

CC TRANSECT:

Round	CC1S	CC1D	CC2S	CC2D	CC3S	CC3D	CC4S	CC4D	CC5S	CC5D	CC6S	CC6D
1												
2												
3												
4												
5												
6												
	CCdup1			CCdup2			CCdup3			CCdup4		

Zeroed using background 15 at HRM 197.0
standard reads 24 (0.6 ug/l) X3 scale (at end: 23)
" 0.5 (") X1 scale (at end: 3)

Sample collection date: 10/3/95
Date of analysis: 10/4/95

004 TRANSECT:

Round	0041S	0041D	0042S	0042D	0043S	0043D	0044S	0044D	0045S	0045D	0046S	0046D
1	0	0	0	0	0	0	0	0	0	0	43.5	37
2	0	0	0	0	0	0	0	0	0	0	36.5 (X1)	33 (X1)
3	0	0	0	0	0	0	0	0	0	0	72 (X1)	80.5 (X1)
4	0	0	0	0	0	0	0	0	0	0	74 (X1)	off scale >80
5	0	0	0	0	0	0	0	0	0	0	10	17
6	0	0	0	0	0	0	0	0	0	0	15	12.5
	004dup1	0		004dup2	0		004dup3	0		004dup4	16	

15 Blank Zeroed using HRM 197.0
Std. 0.6 ug/L reads 22.5 (x3 scale) 21.5 @ end
2.5 (x1 scale) 3.0 @ end.

Sample collection date: 10/3/95
Date of analysis: 10/5/95

FED TRANSECT

Round	FED1S	FED1D	FED2S	FED2D	FED3S	FED3D	FED4S	FED4D	FED5S	FED5D	FED6S	FED6D
1	0	0.5	0	0	0.5	0.5	4	7.5	25	44	56	70
2	0	0	0	1	2	2.5	8	14	50	38	90.5	74
3	0	0.5	1.5	1	1.5	4	10	13	63.5	61	90	83
4	1	0	2	2	4	4	23	17.5	64	76.5	33 (1X)	36 (1X)
5	1.5	0	0	0	1	1	7.5	11	41	45	65	69
6	0.5	0	0	0	1	1	4.5	4	29	27.5	62	65.5
	FEDdup1	1		FEDdup2	19.5		FEDdup3	1		FEDdup4	26	

15 Blank checked. OK
Std. 0.6 ug/L reads 22 (x3 scale); 22.5 end
2.5 (x1 scale); 2.5 end.

Sample collection date: 10/4/95
Date of analysis: 10/5/95

TIP TRANSECT

Round	TIP1S	TIP1D	TIP2S	TIP2D	TIP3S	TIP3D	TIP4S	TIP4D	TIP5S	TIP5D	TIP6S	TIP6D
1	6.5	5.5	7	6.5	11	10.5	13.5	13.5	13	12.5	27.5	12.5
2	12.5	12	13	12	19	18	19	18.5	18	18	16.5	16.5
3	17.5	17	18	18	20.5	21.5	20.5	20.5	20.5	20.5	19.5	19.5
4	21	20	21.5	21.5	21.5	21	20.5	20	21	20	19.5	20
5	19	20	21	20.5	20	20	18.5	19	19	18.5	18	27.5
6	22	21.5	22	21.5	20	20	18.5	18.5	19	19	18	18
	TIPdup1	12.5		TIPdup2	20.5		TIPdup3	20.5		TIPdup4	21	

321079

Sample collection date: 10/3/95
Date of analysis: 10/4/95

HRM 197.0 BACKGROUND

Round	HRM 197.0S	HRM 197.0D
1	9	6.5
2	7	6
3	7	7
4	31 (see below (1))	6.5
5	7	6.5
6	7	7

1. Zero to blank cuvette
2. Standard 0.6 ug/L reads 32 on X3 range
3. Read samples
4. Standard 0.6 ug/L reads 31.5 on X3 range.

use Round 15 as zero for remaining samples.

(1) ranged from 28 to 45 and back down - stable around 31 — redone w/ different cuvette = 6.5

(2) Dup reading = 7

321080

APPENDIX G

PCB DATA PACKAGES
(2 Volumes Bound Separately)

APPENDIX H

TSS DATA

NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
SEPTEMBER 5, 1995

O'BRIEN & GERE ENGINEERS, INC.
5000 Brittonfield Parkway
Suite 300, PO Box 4942
Syracuse, NY 13221
Contact: Mr. Bill Ayling

SAMPLE MATRIX:	WATER	DATE SAMPLED:	08/24/95
DATE SUBMITTED:	08/25/95	LOCATION:	HUDSON RIVER JOB 612.186
CUSTOMER PO#:	N/A	LAB ELAP #:	#11078

Non-Filterable Residue (TSS) by EPA 1979 Method 160.2

NEA#	CLIENT ID.	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
957046	CC-1	2.5	1.7	08/31/95
957047	CC-2	2.5	2.1	08/31/95
957048	CC-3	2.6	2.4	08/31/95
957049	CC-4S	3.3	2.4	08/31/95
957050	CC-4D	2.5	2.3	08/31/95
957051	CC-5S	2.6	2.4	08/31/95
957052	CC-5D	2.6	2.2	08/31/95
957053	CC-6	2.6	2.3	08/31/95

Quality control data for nonfilterable residue

Method blank summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
950831B	< 1.0	1.0	08/31/95

Reference sample and sample duplicate summary

NEA#	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS	%RPD	%RPD LIMITS
950831CA	651	694	106.6	89-111	-	-
950831CB	651	681	104.6	89-111	1.9	20

REFERENCE SAMPLE: 651 mg/L Talc solution. J.T. Baker Lot#G30334.
Standard reference: 061495p59bBK#3.

Authorized Signature: R. Louis Reynolds

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

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NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
SEPTEMBER 20, 1995

O'BRIEN & GERE ENGINEERS, INC.
5000 Brittonfield Parkway
Suite 300, PO Box 4873
Syracuse, NY 13221
Contact: Mr. Bill Ayling

SAMPLE MATRIX:	WATER	DATE SAMPLED:	09/07/95
DATE SUBMITTED:	09/08/95	LOCATION:	HUDSON RIVER JOB 612.186.652
CUSTOMER PO#:	N/A	LAB ELAP #:	#11078

Non-Filterable Residue (TSS) by EPA 1979 Method 160.2

NEA#	CLIENT ID.	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
957370	CC1S	2.1	1.2	09/12/95
957371	CC1D	3.2	1.2	09/12/95
957372	CC2S	1.4	1.3	09/12/95
957373	CC2D	1.2	1.0	09/12/95
957374	CC3S	1.3	1.3	09/12/95
957375	CC3D	< 1.2	1.2	09/12/95
957376	CC4S	< 1.2	1.2	09/12/95
957377	CC4D	1.9	1.2	09/12/95
957378	CC5S	< 1.3	1.3	09/12/95
975379	CC5D	2.2	1.3	09/12/95
957380	CC6S	1.7	1.3	09/12/95
957381	CC6D	< 1.3	1.3	09/12/95
957382	BLIND FIELD DUPLICATE HRdup1	1.5	1.3	09/12/95
957384	0041S	1.8	1.0	09/12/95
957385	0041D	2.0	1.0	09/12/95
957386	0042S	2.7	1.0	09/13/95
957387	0042D	2.4	1.0	09/13/95
957388	0043S	3.0	1.0	09/13/95
957389	0043D	2.7	1.0	09/13/95
957390	0044S	2.8	1.0	09/13/95
957391	0044D	3.2	1.0	09/13/95

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

NEA#	CLIENT ID.	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
957392	0045S	2.2	1.0	09/13/95
957393	0045D	2.2	1.0	09/13/95
957394	0046S	2.2	1.0	09/13/95
957395	0046D	2.3	1.0	09/13/95
957397	BLIND FIELD DUPLICATE HRdup2	2.4	1.0	09/13/95
957399	FED1S	2.3	1.1	09/13/95
957400	FED1D	2.6	1.0	09/13/95
957401	FED2S	2.3	1.0	09/13/95
957402	FED2D	2.5	1.1	09/13/95
957403	FED3S	2.3	1.1	09/13/95
957404	FED3D	2.6	1.0	09/13/95
957405	FED4S	3.2	1.1	09/13/95
957406	FED4D	2.3	1.1	09/14/95
957407	FED5S	2.2	1.0	09/14/95
957408	FED5D	1.9	1.1	09/14/95
957409	FED6S	2.3	1.1	09/14/95
957410	FED6D	2.0	1.1	09/14/95
957412	BLIND FIELD DUPLICATE HRdup3	2.0	1.1	09/14/95
957414	BACKGROUND	< 1.3	1.3	09/14/95

Authorized Signature: R. Chris Hymes

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

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Quality control data for nonfilterable residue

Method blank summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
950912B	< 1.0	1.0	09/12/95
950913B	< 1.0	1.0	09/13/95
950914B	< 1.0	1.0	09/14/95

Reference sample summary

NEA#	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS
950912LCSA	46.9	51.0	108.7	85-115
950912LCSB	46.9	53.0	113.0	85-115
950913LCS	46.9	47.2	100.6	85-115
950914LCS	651	687	105.5	88-111

REFERENCE SAMPLE #1: ERA small lab WastewatR Lot# 8055: total suspended solids sample.

REFERENCE SAMPLE #2: 651 mg/L Talc solution. J.T. Baker Lot#g30334.

Duplicate sample summary

NEA#	SAMPLE CONC. (mg/L)	DUPLICATE SAMPLE CONC. (mg/L)	%RPD	%RPD LIMITS
957494	14	14	0.0	20
950912LCS	51	53	3.8	20
957493	46	48	4.2	20
957491	48	54	11.8	20
957492	19	20	5.1	20

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NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
SEPTEMBER 20, 1995

O'BRIEN & GERE ENGINEERS, INC.
5000 Brittonfield Parkway
Suite 300, PO Box 4873
Syracuse, NY 13221
Contact: Mr. Bill Ayling

SAMPLE MATRIX:	WATER	DATE SAMPLED:	09/08/95
DATE SUBMITTED:	09/08/95	LOCATION:	HUDSON RIVER JOB 612.186
CUSTOMER PO#:	N/A	LAB ELAP #:	#11078

Non-Filterable Residue (TSS) by EPA 1979 Method 160.2

NEA#	CLIENT ID.	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
957454	TIP1S	< 1.3	1.3	09/14/95
957455	TIP1D	2.7	1.3	09/14/95
957456	TIP2S	2.3	1.3	09/14/95
957457	TIP2D	3.4	1.3	09/14/95
957458	TIP3S	2.4	1.2	09/14/95
957459	TIP3D	1.9	1.3	09/14/95
957460	TIP4S	2.9	1.3	09/14/95
957461	TIP4D	3.2	1.3	09/14/95
957462	TIP5S	3.0	1.3	09/14/95
957463	TIP5D	4.0	1.3	09/14/95
957464	TIP6S	3.3	1.3	09/14/95
957465	TIP6D	3.9	1.3	09/14/95
957466	BLIND DUPLICATE	4.4	1.3	09/14/95

Authorized Signature: T. Chris Hynes

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

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NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

Quality control data for nonfilterable residue

Method blank summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
950914B	< 1.0	1.0	09/14/95

Reference sample summary

NEA#	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS
950914LCS	651	687	105.5	88-111

REFERENCE SAMPLE: 651 mg/L Talc solution. J.T. Baker Lot#G30334.

Duplicate sample summary

NEA#	SAMPLE CONC. (mg/L)	DUPLICATE SAMPLE CONC. (mg/L)	%RPD	%RPD LIMITS
957494	14	14	0.0	20
957495	98	110	11.5	20

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NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
OCTOBER 13, 1995

O'BRIEN & GERE ENGINEERS, INC.
5000 Brittonfield Parkway
Suite 300, PO Box 4873
Syracuse, NY 13221
Contact: Mr. Bill Ayling

SAMPLE MATRIX:	WATER	DATE SAMPLED:	10/03/95 TIME: N/A
DATE RECEIVED:	10/04/95 TIME: 08:50	DATE ANALYZED:	SEE BELOW
SAMPLED BY:	BA, DR, JF, PF, SW, ML, BH, RM	LOCATION:	HUDSON RIVER JOB 612.198.352
CUSTOMER PO#:	N/A	LAB ELAP #:	#11078

Non-Filterable Residue (TSS) by EPA 1979 Method 160.2

NEA#	CLIENT ID.	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
957945	0041S	7.6	1.2	10/10/95
957946	0041D	7.9	1.2	10/10/95
957947	0042S	7.3	1.3	10/10/95
957948	0042D	7.5	1.2	10/10/95
957949	0043S	6.8	1.3	10/10/95
957950	0043D	7.6	1.3	10/10/95
957951	0044S	7.2	1.3	10/10/95
957952	0044D	7.8	1.2	10/10/95
957953	0045S	7.4	1.3	10/10/95
957954	0045D	7.2	1.2	10/10/95
957955	0046S	7.0	1.3	10/10/95
957956	0046D	7.3	1.3	10/10/95
957958	BLIND FIELD DUPLICATE: HRdup2	7.5	1.2	10/10/95
957960	FED1S	4.9	1.3	10/10/95
957961	FED1D	5.0	1.3	10/10/95
957962	FED2S	5.6	1.2	10/10/95
957963	FED2D	5.8	1.3	10/10/95
957964	FED3S	5.7	1.3	10/10/95
957965	FED3D	5.5	1.3	10/10/95
957966	FED4S	5.8	1.3	10/10/95

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

NEA#	CLIENT ID.	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
957967	FED4D	5.7	1.3	10/10/95
957968	FED5S	5.6	1.3	10/10/95
957969	FED5D	5.4	1.3	10/10/95
957970	FED6S	5.2	1.3	10/10/95
957971	FED6D	5.6	1.3	10/10/95
957973	BLIND FIELD DUPLICATE: HRdup3	5.6	1.3	10/10/95
957975	HRM 197.0	1.9	1.0	10/10/95
957976	HRM 196.8	5.9	1.0	10/10/95
957977	HRM 194.2	4.2	1.0	10/10/95
957978	HRM 188.5	2.4	1.0	10/10/95
957979	BLIND DUPLICATE PCRDMP	9.7	1.1	10/10/95
957982	HRM 197.0S	1.8	1.0	10/10/95
957983	HRM 197.0D	1.9	1.0	10/10/95
957984	CC1S	7.1	1.3	10/10/95
957985	CC1D	7.0	1.2	10/10/95
957986	CC2S	7.2	1.2	10/10/95
957987	CC2D	8.2	1.3	10/10/95
957988	CC3S	7.3	1.3	10/10/95
957989	CC3D	7.6	1.2	10/10/95
957990	CC4S	8.1	1.3	10/10/95
957991	CC4D	8.8	1.2	10/10/95
957992	CC5S	6.8	1.3	10/10/95
957993	CC5D	7.6	1.3	10/10/95
957994	CC6S	7.3	1.3	10/10/95
957995	CC6D	7.9	1.3	10/10/95
957996	BLIND FIELD DUPLICATE: HRdup1	7.1	1.3	10/10/95

Authorized Signature: R. Chris Haynes

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

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Quality control data for nonfilterable residue

Method blank summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
951010B	< 1.0	1.0	10/10/95

Reference sample summary

NEA#	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS
951010LCSA	64.7	67.6	104.5	85-115
951010LCSB	64.7	65.7	101.5	85-115

REFERENCE SAMPLE#1: ERA Small lab WastewatR Lot# 8056: total suspended solids sample.

Duplicate sample summary

NEA#	SAMPLE CONC. (mg/L)	DUPLICATE SAMPLE CONC. (mg/L)	%RPD	%RPD LIMITS
951010LCS	67.6	65.7	2.8	20

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NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
OCTOBER 13, 1995

O'BRIEN & GERE ENGINEERS, INC.
5000 Brittonfield Parkway
Suite 300, PO Box 4873
Syracuse, NY 13221
Contact: Mr. Bill Ayling

SAMPLE MATRIX:	WATER	DATE SAMPLED:	10/04/95 TIME: N/A
DATE RECEIVED:	10/05/95 TIME: 10:50	DATE ANALYZED:	SEE BELOW
SAMPLED BY:	M. LARUE	LOCATION:	HUDSON RIVER JOB 612.198.352
CUSTOMER PO#:	N/A	LAB ELAP #:	#11078

Non-Filterable Residue (TSS) by EPA 1979 Method 160.2

NEA#	CLIENT ID.	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
958035	TIP1S	3.4	1.3	10/11/95
958036	TIP1D	4.0	1.3	10/11/95
958037	TIP2S	3.2	1.3	10/11/95
958038	TIP2D	3.5	1.2	10/11/95
958039	TIP3S	4.2	1.3	10/11/95
958040	TIP3D	4.0	1.3	10/11/95
958041	TIP4S	4.5	1.3	10/11/95
958042	TIP4D	4.6	1.3	10/11/95
958043	TIP5S	3.8	1.3	10/11/95
958044	TIP5D	4.4	1.2	10/11/95
958045	TIP6S	4.5	1.3	10/11/95
958046	TIP6D	4.6	1.2	10/11/95
958047	BLIND DUPLICATE: HRdup4	4.7	1.3	10/11/95

uthorized Signature: T. Chris Hynes

ortheast Analytical, Inc.
obert E. Wagner, Laboratory Director

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

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Quality control data for nonfilterable residue

Method blank summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
951011B	< 1.0	1.0	10/11/95

Reference sample summary

NEA#	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS
951011LCSA	64.7	67.5	104.3	85-115

REFERENCE SAMPLE#1: ERA Small lab WastewatR Lot# 8056: total suspended solids sample.

Duplicate sample summary

NEA#	SAMPLE CONC. (mg/L)	DUPLICATE SAMPLE CONC. (mg/L)	%RPD	%RPD LIMITS
958055	84	88	4.6	20

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APPENDIX I

PCB MASS TRANSPORT ESTIMATES

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT

River Monitoring Test

PCB Mass Transport Calculations

An objective of the *River Monitoring Test* is to evaluate the distribution of PCB mass transport in the river. Four transects (CC, 004, FED, and TIP) were sampled along the upper Hudson River (Figure 1). The cross-sectional area of the river at each transect was estimated bathymetric survey data collected during field activities. For the PCB mass transport calculations, the cross-sectional areas of each transect were divided into six subareas. Samples (surface and deep) were collected from a sampling station located within each subarea (stations 1-6). The remainder of this appendix provides details of the PCB mass transport calculations as outlined below.

- Overview of mass transport
- Flow estimates
  - cross-sectional area measurement
  - velocity measurement
- PCB concentrations
- PCB mass transport calculations
- Evaluation of error

The assumptions used in the development of each component of the mass transport estimates are included.

<u>Overview of mass transport</u>
Mass transport (mass/unit time) for a given subarea is calculated as the product of flow and PCB concentration measured at that station:

$$M_n = Q_n * C_n \qquad \text{(Eq. 1)}$$

where:

n = subarea sampling stations 1 through 6 (n=1-6)
M_n = mass transport in a subarea of a transect
Q_n = flow in subarea n
C_n = PCB concentration in subarea n (mean of surface and deep samples)

Conversion of units was required before the calculations were performed to obtain the PCB mass transport results in kilograms/day. Total PCB mass transport at a transect is simply the sum of the mass transport at each sub-area.

Flow estimates

To identify Q_n for each subarea, the instantaneous flows obtained at each station during field activities were used to normalize USGS mean flow data to provide mean flows for the two six-hour events. This was accomplished in three steps:

- First, the mean percentage of flow in each subarea was estimated based on three rounds of hydrologic field data (Table 1).
- Second, the mean total flow rate for the river over the two six-hour sampling events was obtained from USGS monitoring at the Fort Edward gaging station (Table 2).
- Third, the mean percentage of flow for each subarea was multiplied by the mean USGS total flow for each event to obtain the mean flow for each subarea for each six-hour sampling event.

Details are provided below.

1. Percentage of flow estimated from instantaneous field measurements

As discussed in subsection 2.1, estimates of instantaneous flow rates for each subarea of each transect, Qi_n, were derived as the product of the subsectional area and instantaneous flow velocities obtained during bathymetric and hydrologic surveys conducted in the field:

$$Qi_n = Vi_n A_n \qquad \text{(Eq. 2)}$$

where:

Qi_n = calculated subarea instantaneous flow (ft^3/sec)
Vi_n = instantaneous subarea flow velocity (ft/sec) measured in the field (Table 1)
A_n = transect subarea (ft^2) calculated from bathymetry obtained from field measurements (Figure 5)

Instantaneous velocity measurement (Vi_n)

Instantaneous flow velocities were measured for one round of sampling during each sampling event using a Marsh McBurney model 201 velocity meter. Instantaneous flow velocities were obtained at several locations along each transect (Table 1).

Subarea measurement (A_n)

Baseline subareas were established during preliminary field work. Baseline water depths were obtained during preliminary field work at the same locations that instantaneous flow velocities were measured along each transect (Table 1). These data provide baseline cross-sectional areas (A_n) of the river channel at each sampling transect (Figure 5).

For subsequent transect sampling, cross-sectional areas were adjusted for flow conditions encountered during each event using water depth data collected adjacent to sample station 1 as a reference point. It was assumed that water depth changes were consistent across the river. Therefore, the cross-sectional area of each subarea was increased or decreased, as appropriate, based

on the change in water depth from the baseline. It was also assumed that the width of the transacts remained constant and was not impacted significantly by the changes in water elevation experienced during the *River Monitoring Test*. Consequently, the cross-sectional areas were adjusted vertically, but not horizontally.

Instantaneous flow (Qi)
As stated previously, instantaneous flow was calculated as the product of the cross-sectional area and associated instantaneous flow velocity (Eq. 2). Subsequently, instantaneous total flow measured at the transect (Qi_t) is the sum of the subarea instantaneous flows(Qi_n):

$$Qi_t = \text{sum of } Qi_n \qquad \text{(Eq. 3)}$$

Mean percentage of total flow through each subarea of each transect was calculated using the three sets of data - baseline, and transacts 1 and 2 data. The instantaneous flows derived from field measurements were verified by comparison to instantaneous flow readings obtained from the Fort Edward gaging station, adjusted for estimated time of travel. Mean percentage of total flow through each subarea was used to develop the mean flows used for the mass transport calculations to minimize the typical variability experienced when measuring open channel flow.

2. USGS flow data collected during transect sampling event

The mean total flow rate for each event was estimated from provisional data collected at 15-minute intervals at the Fort Edward gaging station (Table 2). The mean, minimum, and maximum flows are summarized in Table I-1 below.

Table I-1. *USGS Flow data for transect sampling events*

Event Date	mean	min	max	Time interval
September 7, 1995	2,400	1,719	2,789	13:30 - 19:30
October 3, 1995	2,160	1,094	3,175	11:00 - 17:00

The time interval presented in the table accounts for the time of travel of the subject volume of water from the dye injection location to the gaging station. Therefore, the time interval of interest is the same as the sampling period for the FED transect, as the transect is adjacent to the gaging station.

3. Calculation of mean flows for each subarea
Mean percentage of flow for each subarea (1 above) was multiplied by mean total flows (2 above) to obtain mean flow values for each subarea (Table I-2). Flow in the Hudson River varied during each sampling event, however, the percentages of total flow in each subarea, which were calculated for the bathymetric survey and the two subsequent sampling events, were similar (Table 1).

PCB concentrations

Mean PCB concentrations of the surface and deep composite samples were employed for PCB mass transport calculations (Table I-2). For each sampling round, aliquots were collected in approximately equal volumes. Therefore, the samples were not flow proportioned and variations in flow observed during each event are not accounted for in total PCB concentrations. This limitation does not impact the comparability of PCB concentration data or related PCB mass transport estimates from each transect as sample collection at each transect was timed to represent the same mass of water as it traveled down the river.

PCB mass transport

Mass transport estimates are presented in Table I-2. In the table, mean flows (as determined in step 3 above) in each subsection are multiplied by mean PCB concentrations to obtain mean PCB transport in each subsection. Before these calculations are performed a conversion factor is applied to obtain the final units in kg/day.

Evaluation of error associated with mass balances

The errors associated with mass balances include the sum of the errors associated with the components of the estimates, specifically hydrologic, field sampling and analytical errors. Potential sampling and analytical errors were expected to be small in comparison to potential hydrologic measurement errors.

Hydrologic measurements

Hydrologic measurement errors are associated with the difficulties encountered due to the irregular shape of the channel. In addition, river flows varied substantially during the transect sampling events (Tables 2 and I-1). Comparison of flow data for the six-hour period of each transect sampling event (Table I-1) with mean daily flows presented for the PCRDMP sampling on the same days (Table 7) indicates that there is a difference of approximately 10 percent. For each of the two sampling events, the six-hour event average flow was less than the mean daily flow. This difference should be considered when comparing transect and PCRDMP mass transport data. The USGS flow data is provisional and as such is subject to revision. This source of error was minimized by timing sample collection at each transect to represent the same mass of water as it traveled down the river.

Sampling limitations and analytical error

Sampling limitations may contribute to mass estimate errors:

- Composite samples were not flow weighted to account for flow variations that occur in the river over time. This limitation potentially impacts the total PCB mass estimate, but should not affect the comparability of mass estimates between transects as sample collection was timed to represent the same mass of water.

- Sampling conducted at discrete intervals is assumed representative of the concentrations that occur over the subject time periods. Deviation of the instantaneous sample measurement from the actual mean concentrations over the six-hour sampling period may occur. For example, transect sampling PCB concentrations used in mass balance calculations were developed from composite sampling data collected during the six-hour sampling event from

aliqouts collected at hourly intervals.

- Samples were not collected across each transect instantaneously, therefore spatial differences in PCB concentration that occur at the transacts during the time required to sample each transect, approximately 20 minutes, is not accounted for in mass estimates.

Analytical error is evaluated as the cumulative error associated with the accuracy and precision of the PCB measurement. The precision is expressed as mean relative percent difference (RPD) of duplicate analyses. The mean RPD was less than 15 percent and individual results ranged from 0 to 31 percent (Table 9). Accuracy of the data is evaluated as the recovery of matrix spikes which averaged 96 percent and ranged from 91 to 102 percent (Table 9). The precision and accuracy of the PCB analytical was generally within expected ranges.

Confidence in the representativeness of sampling and the associated analytical data is based on comparison with past data for the site that provides a benchmark from which what is "normal" is recognized. The *River Monitoring Test* data were comparable to results of PCRDMP sampling conducted during that time period.

Summary

The most probable potential for error lies in the development of an accurate hydrologic profile. The irregular shape of the river channel is difficult to map with a high degree of accuracy. Additionally, changes in flow are not necessarily directly proportional to velocity, as variability in local river current patterns occurs as changes in flow cause changes in the cross-sectional area of the river channel. Due to these difficulties in estimating flows, evaluation of the mass transport data should account for these observations. Therefore, small differences between masses calculated should be interpreted as due to error limitations whereas larger differences would be more reliable indicators of change in the system.

Table I-2
General Electric Company
Hudson River Project
River Monitoring Test
PCB mass transport estimates

Transect Location	Transect Station	(1) Percent of Total Flow	Event 1 (Sept. 7- 8, 1995) (2) Estimated Flow (cfs)	(3) Mean PCB Conc. (ng/L)	(4) Mean PCB Mass Trans. (kg/day)	Event 2 (Oct. 3 - 4, 1995) (2) Estimated Flow (cfs)	(3) Mean PCB Conc. (ng/L)	(4) Mean PCB Mass Trans. (kg/day)
CC Transect	A1	1.6	38	50	0.005	34	24	0.002
	A2	2.2	52	35	0.004	47	23	0.003
	A3	2.6	62	38	0.006	56	15	0.002
	A4	17.1	410	74	0.074	369	16	0.014
	A5	63.4	1521	34	0.127	1369	28	0.094
	A6	13.2	316	29	0.022	285	22	0.015
	Total	**100.00**	**2400**		**0.24**	**2160**		**0.13**
004 Transect	A1	27.9	669	40	0.066	602	23	0.034
	A2	14.7	352	34	0.029	317	22	0.017
	A3	10.3	247	33	0.020	222	30	0.016
	A4	12.4	297	42	0.031	267	29	0.019
	A5	19.9	477	34	0.040	429	24	0.025
	A6	14.9	357	55	0.048	321	26	0.020
	Total	**100.00**	**2400**		**0.23**	**2160**		**0.13**
FED Transect	A1	19.7	473	44	0.051	426	28	0.029
	A2	12.4	298	36	0.026	268	28	0.018
	A3	9.2	221	53	0.029	199	24	0.012
	A4	10.7	257	59	0.037	231	27	0.015
	A5	17.9	430	50	0.053	387	22	0.021
	A6	30.1	722	45	0.080	650	30	0.048
	Total	**100.00**	**2400**		**0.28**	**2160**		**0.14**
TIP Transect	A1	8.8	212	74	0.038	190	95	0.044
	A2	6.0	144	98	0.035	130	84	0.027
	A3	19.1	459	68	0.076	413	72	0.073
	A4	17.1	411	81	0.081	370	80	0.072
	A5	13.5	324	76	0.060	292	101	0.072
	A6	35.4	850	64	0.133	765	92	0.172
	Total	**100.00**	**2400**		**0.42**	**2160**		**0.46**

Notes:

1) Percent of total flow estimated from flow velocities measured in the field and calculated cross-sectional area of flow for each sub-area, as presented in Table 1. To provide a total flow of 100.00 percent, a constant was used to adjust the mean flows for the individual transect stations.
2) Based on estimated mean flow for the 6-hr sampling period calculated from USGS flow data reported at 15-min intervals.
3) Average of surface and deep PCB concentrations.
4) Mean PCB mass transport calculated as the product of estimated flow and mean PCB concentrations for each subsection of the transects.

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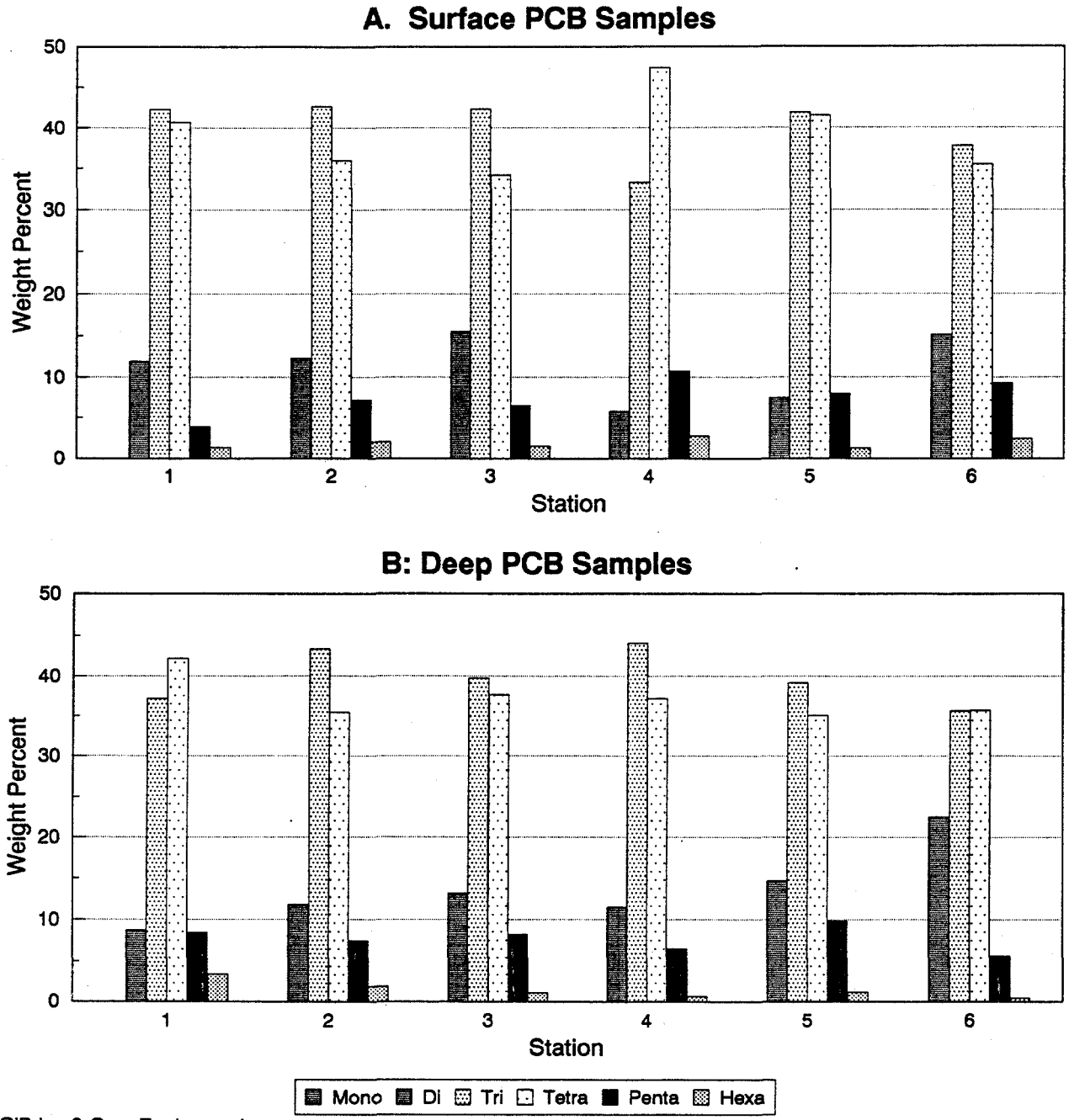
APPENDIX J

PCB HOMOLOG DISTRIBUTIONS

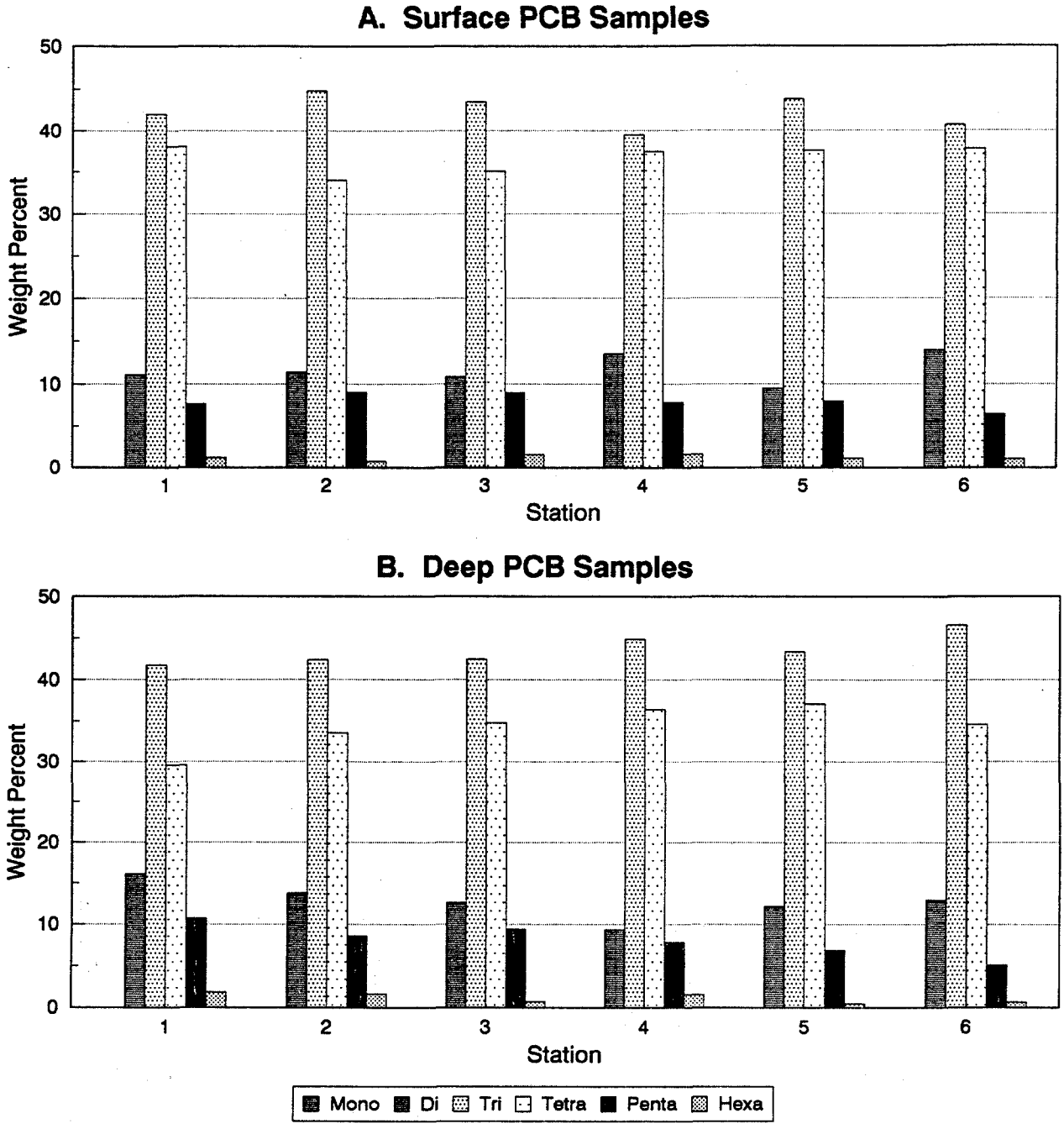
General Electric Company
Hudson River Project River Monitoring Test
Event 1: Canoe Carry PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
November 14, 1995
B:44c:cc.drw

Note: Hepta and octa concentrations less than 1%.

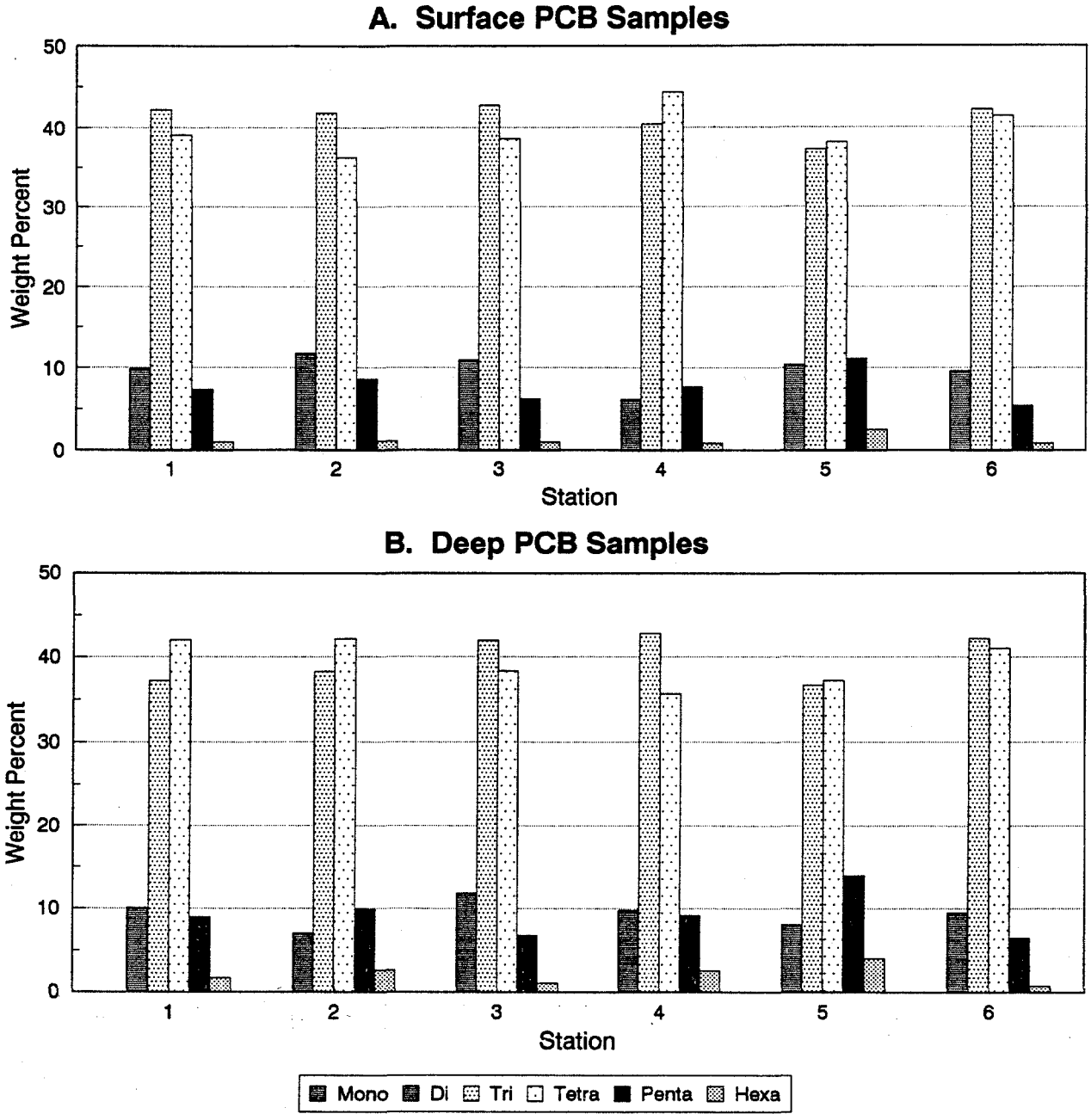
General Electric Company
Hudson River Project River Monitoring Test
Event 1: Outfall 004 PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
November 14, 1995
B:44c:004.drw

Note: Hepta and octa concentrations less than 1%.

General Electric Company
Hudson River Project River Monitoring Test
Event 1: Fort Edward PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
November 14, 1995
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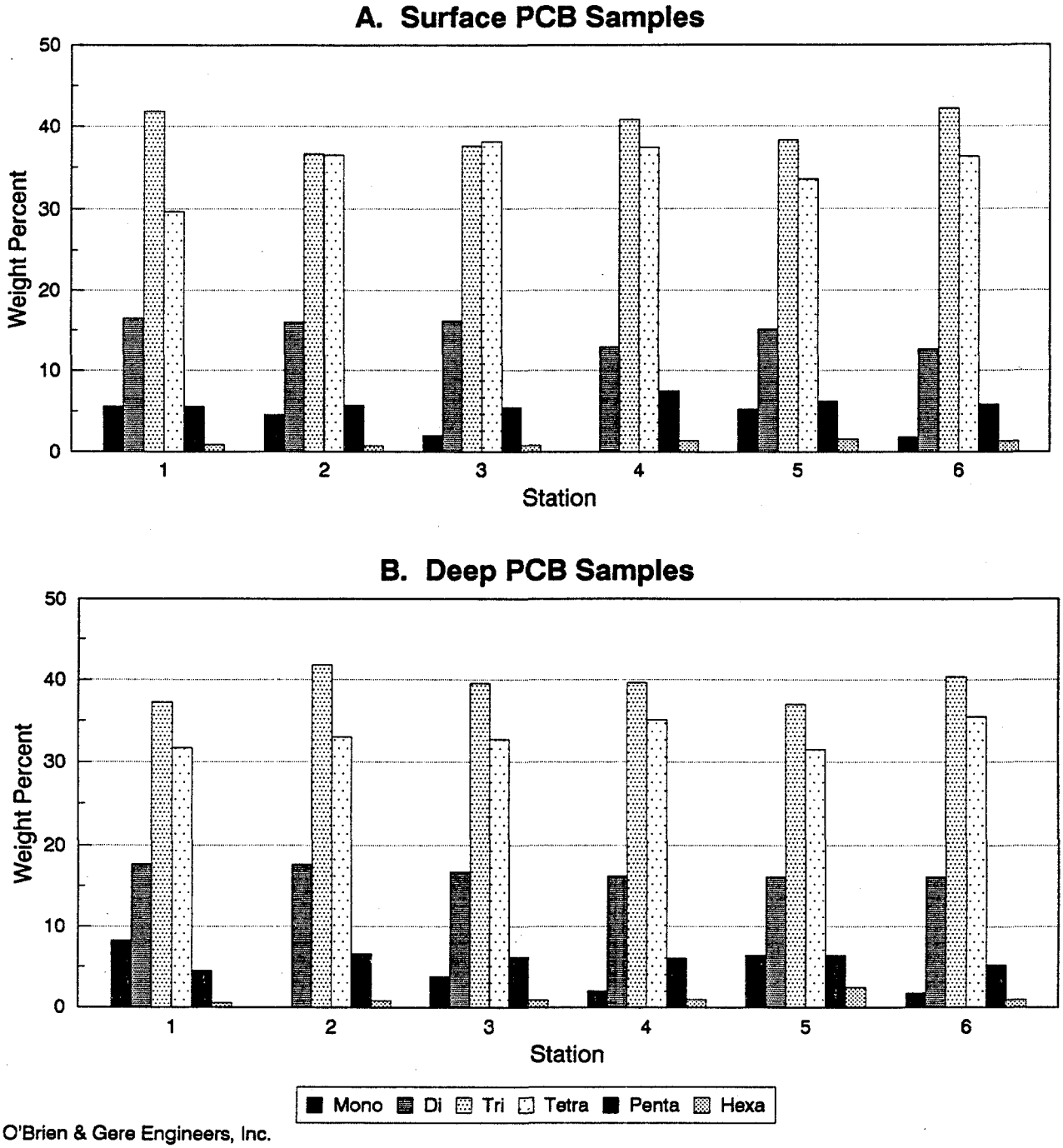
Note: Hepta and octa concentrations less than 1%.

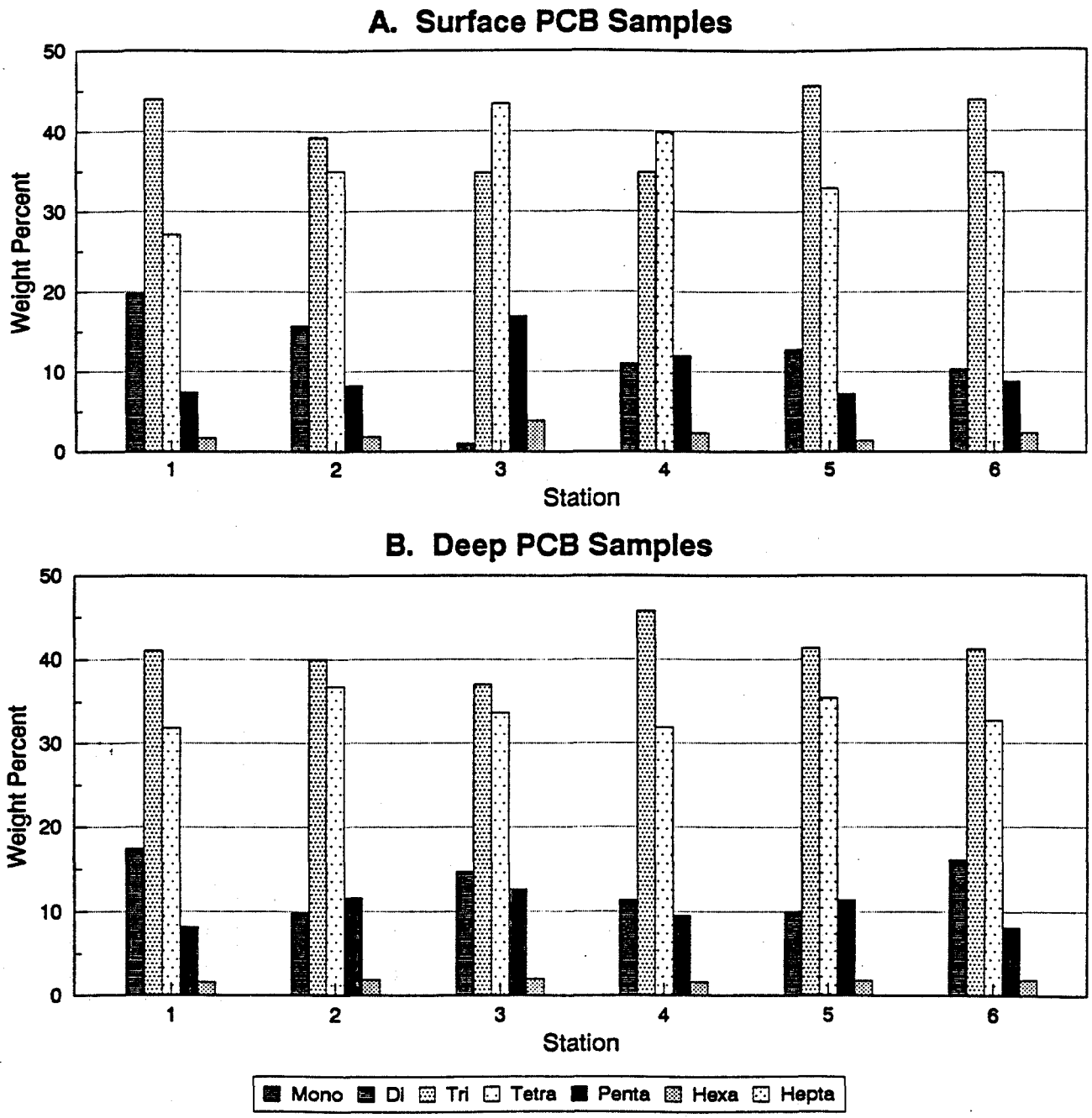
General Electric Company
Hudson River Project River Monitoring Test
Event 1: TIP PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
November 14, 1995
B:44c:tip.drw

Note: Hepta and octa concentrations less than 1%.

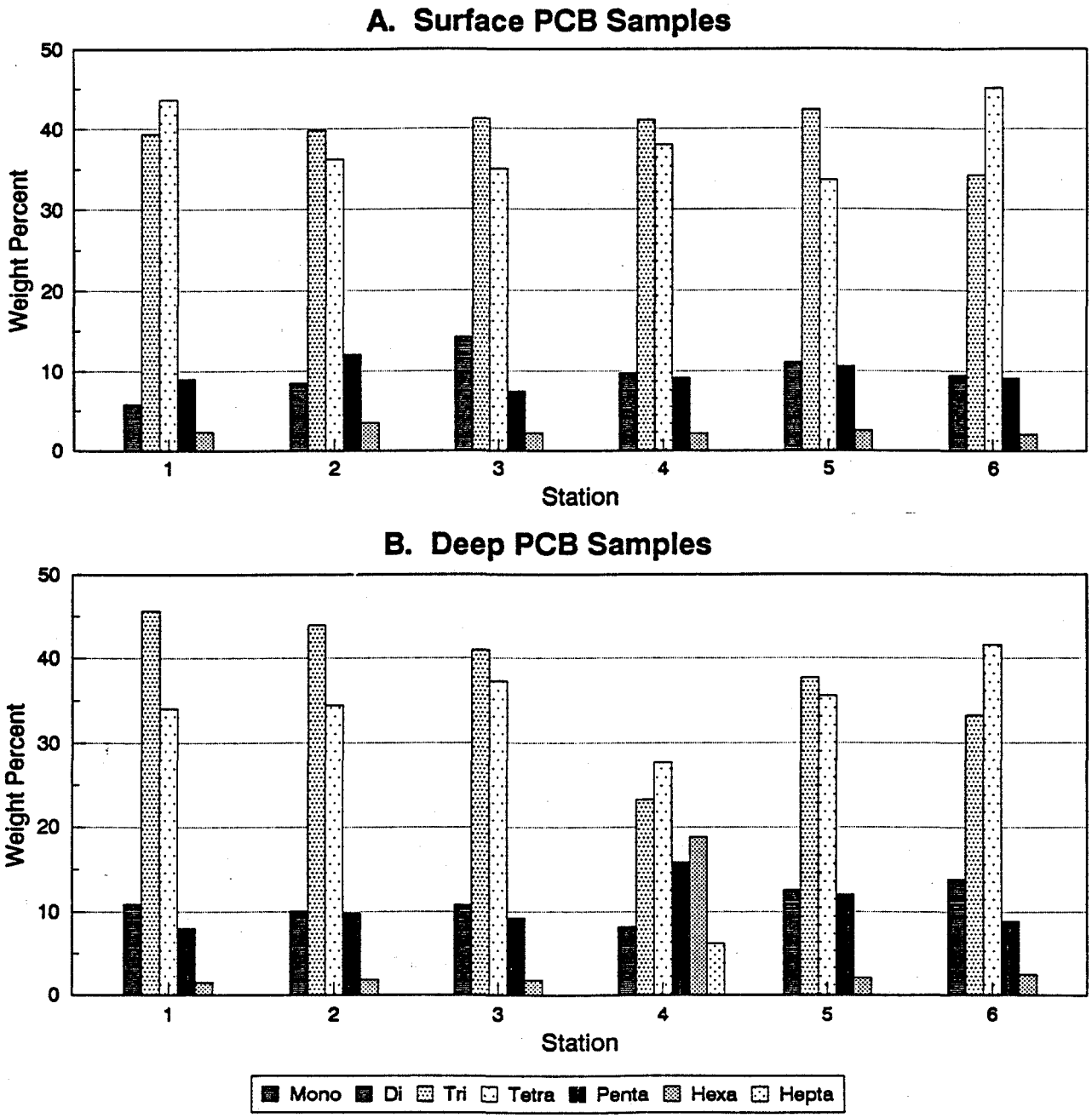
General Electric Company
Hudson River Project River Monitoring Test
Event 2: CC PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
November 16, 1995
B:46b:ccev2.drw

Note: Octa through deca concentrations less than 1%.

General Electric Company
Hudson River Project River Monitoring Test
Event 2: FED PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
November 16, 1995
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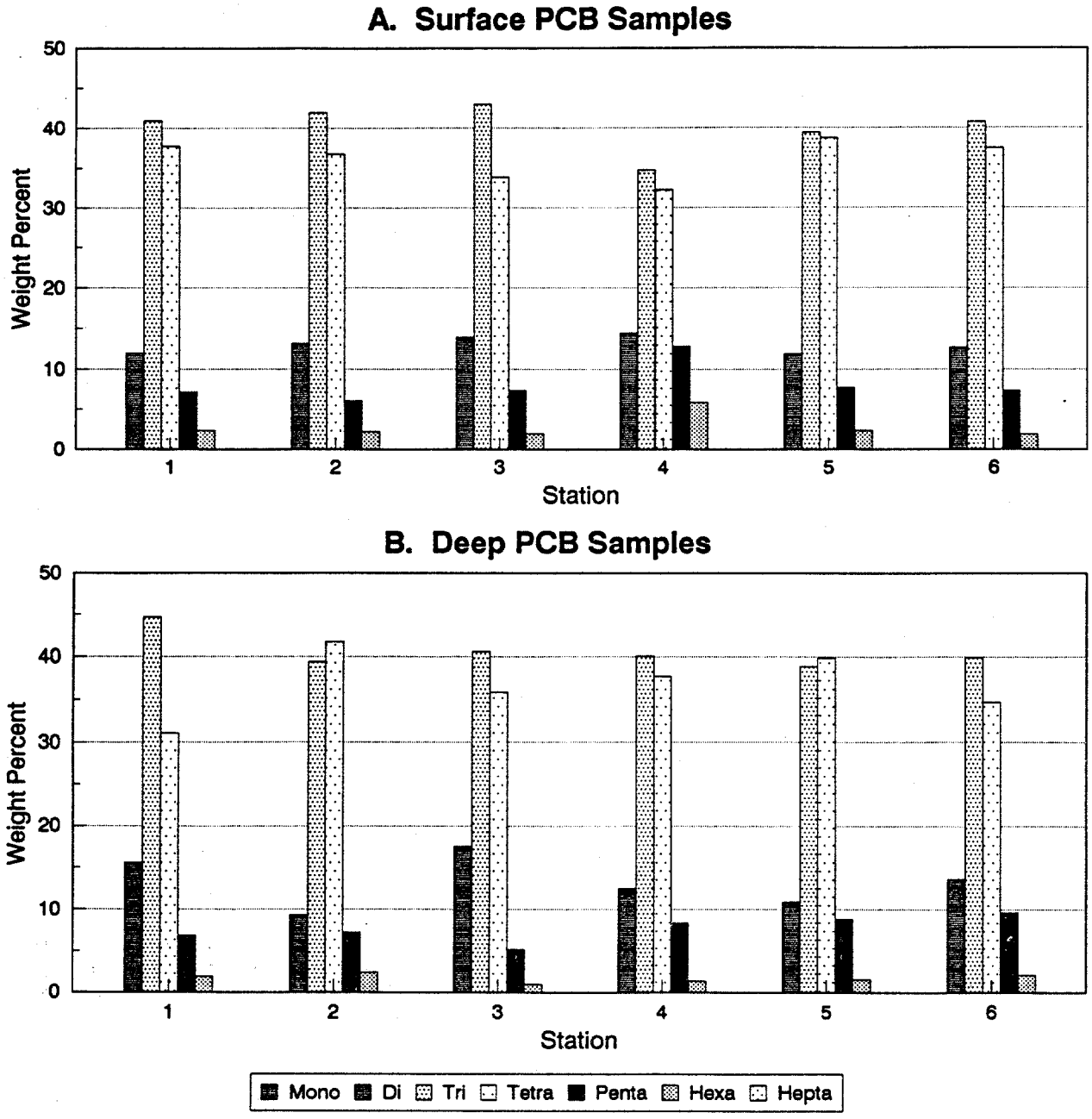
Note: Octa through deca concentrations less than 1%.

General Electric Company
Hudson River Project River Monitoring Test
Event 2: Outfall 004 PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
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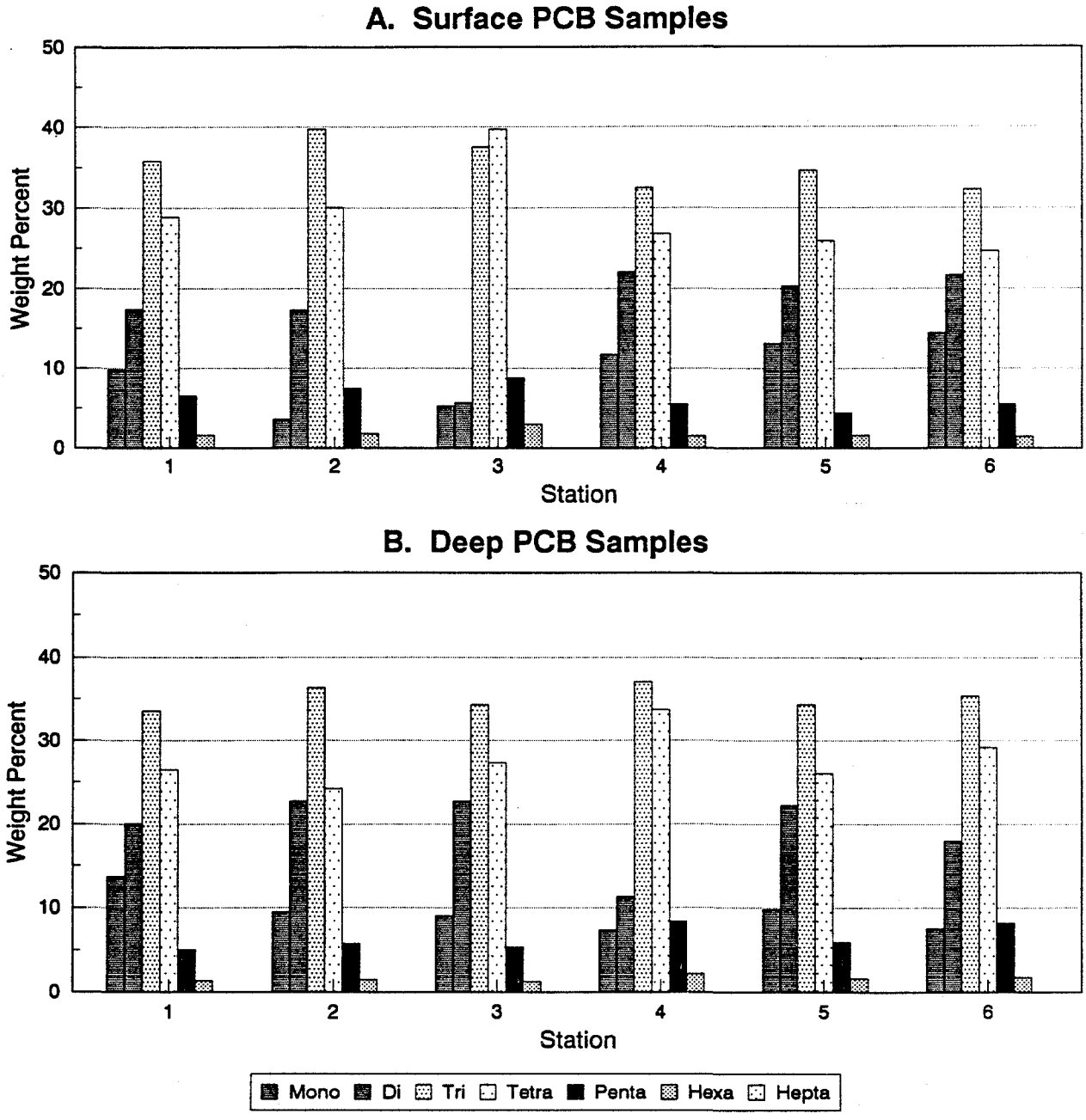
Note: Octa through deca concentrations less than 1%.

General Electric Company
Hudson River Project River Monitoring Test
Event 2: TIP PCB Homolog Distributions



O'Brien & Gere Engineers, Inc.
January 19, 1996
B:44c:tipev2.drw

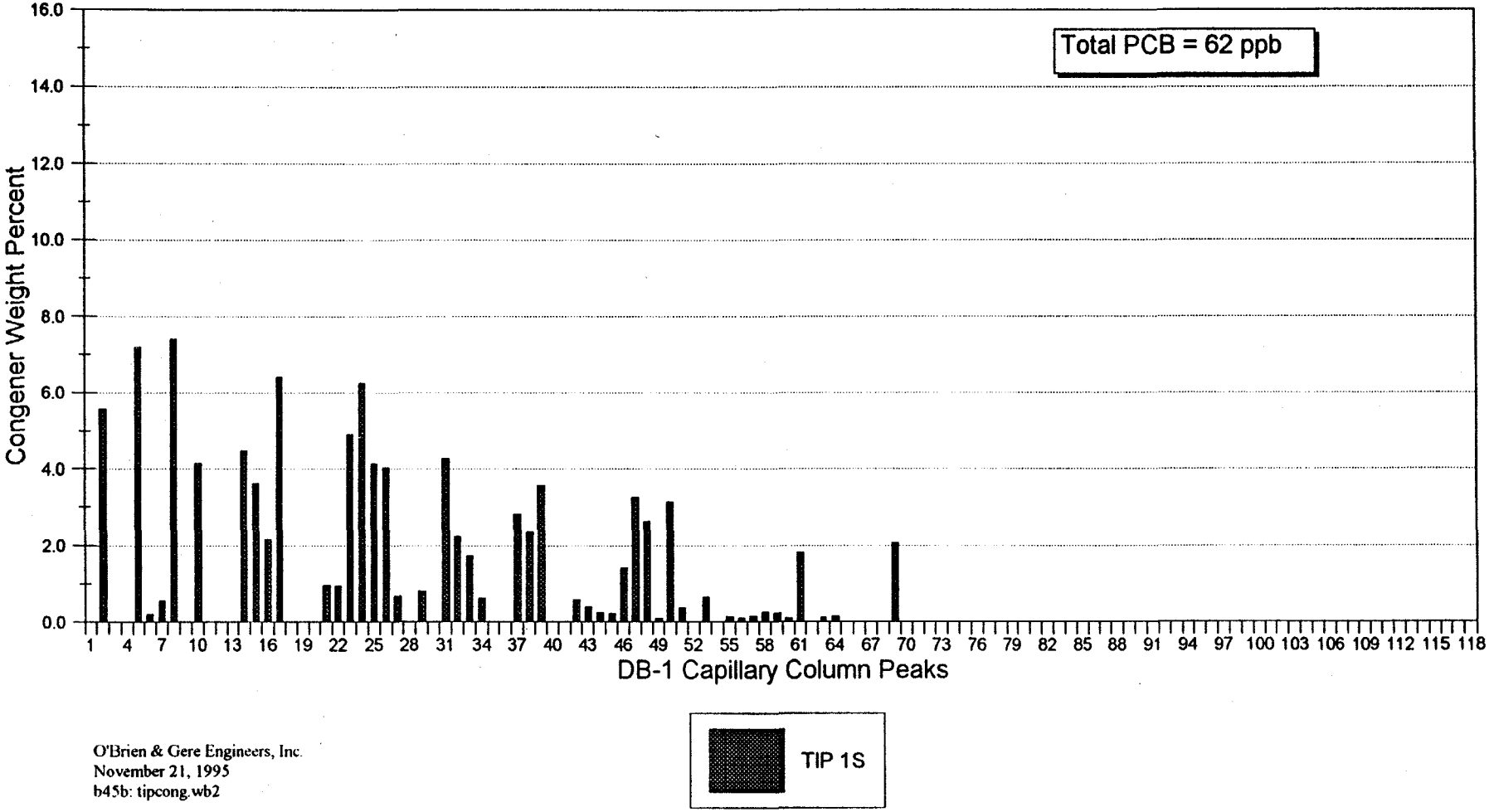
Note: Octa through deca concentrations less than 1%.

APPENDIX K

PCB CONGENER DISTRIBUTIONS FOR THOMPSON ISLAND POOL

General Electric Company

Hudson River Project River Monitoring
TIP Congener Distributions 9/7/95



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November 21, 1995
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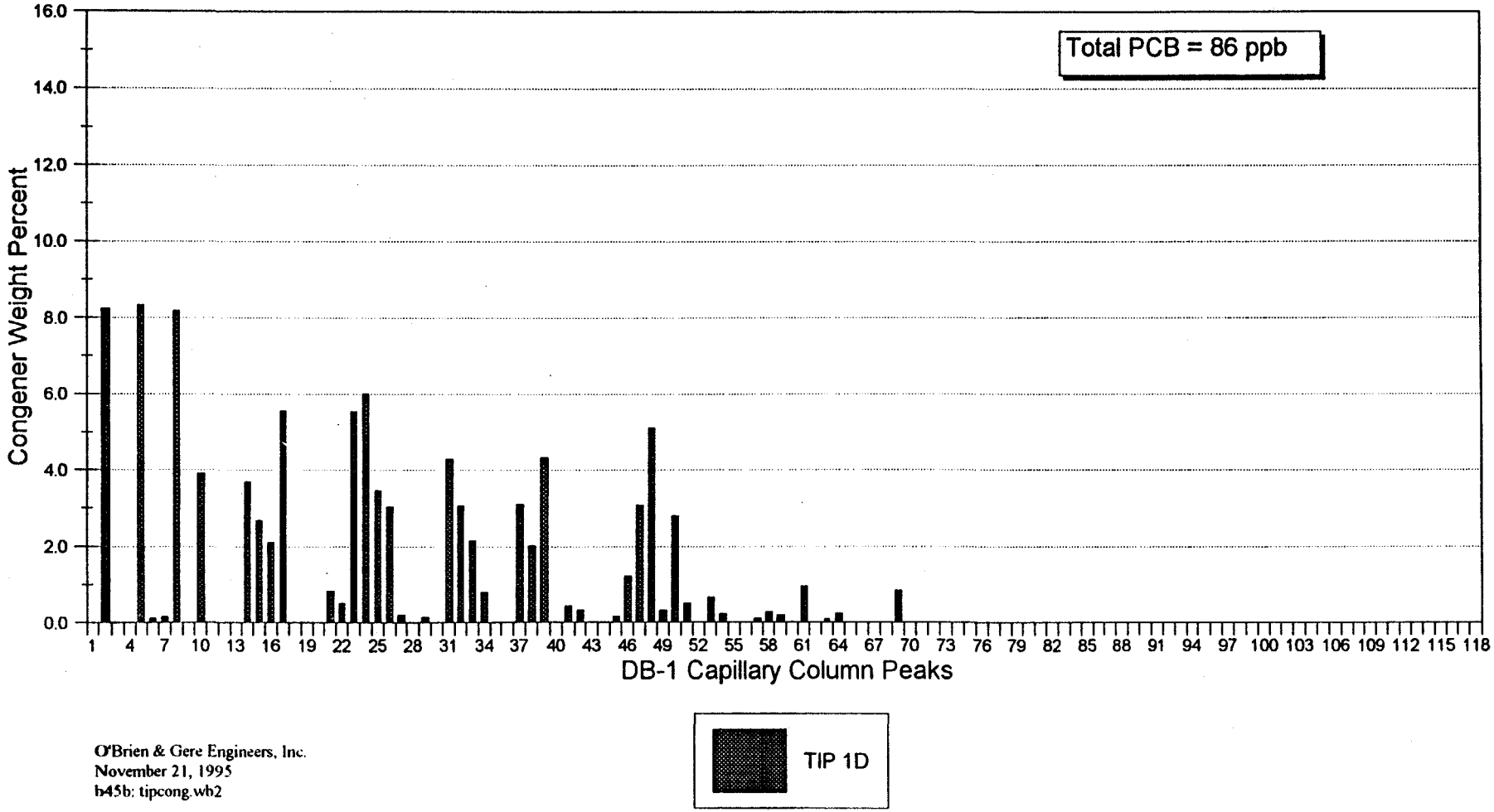
3211111

General Electric Company

Hudson River Project River Monitoring
TIP Congener Distributions 9/7/95



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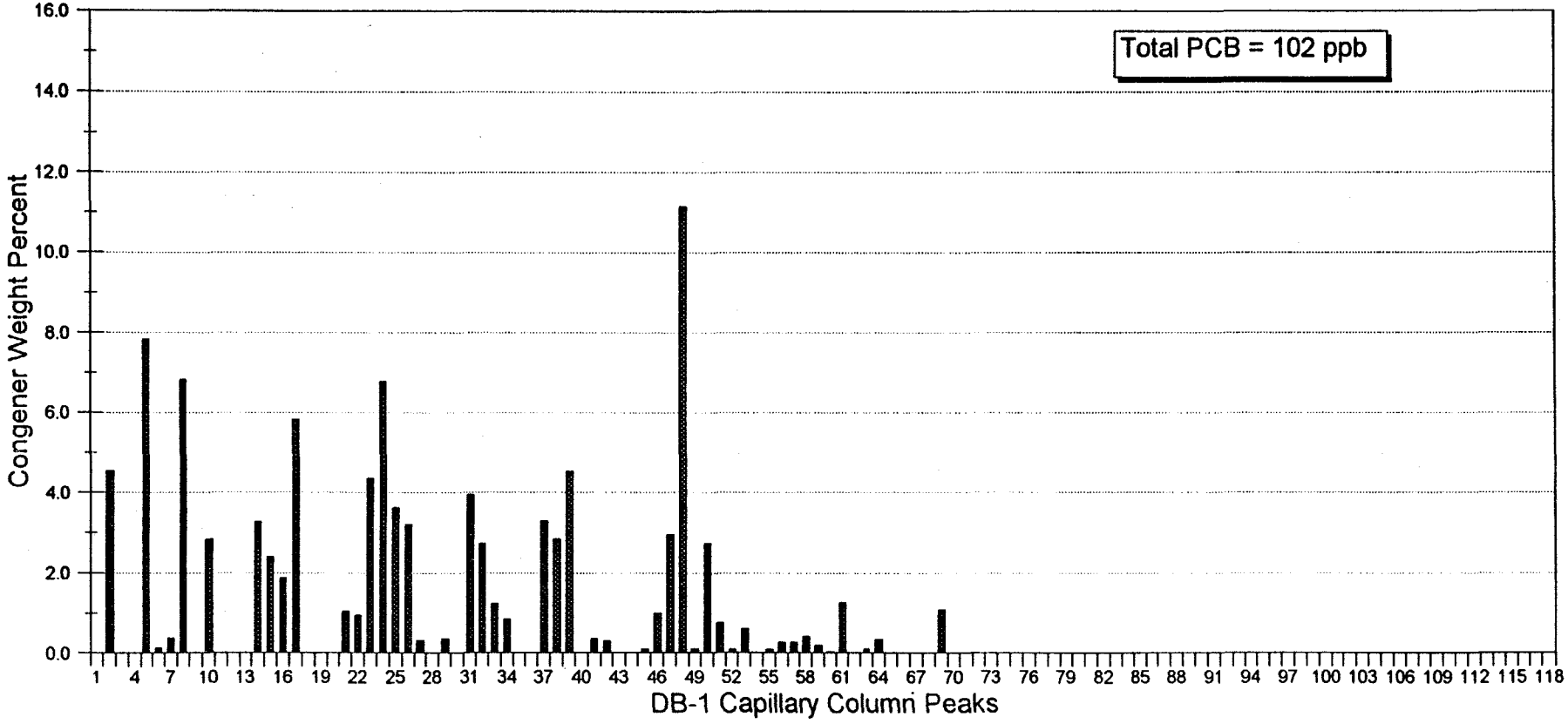
General Electric Company

Hudson River Project River Monitoring
TIP Congener Distributions 9/7/95



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General Electric Company

Hudson River Project River Monitoring
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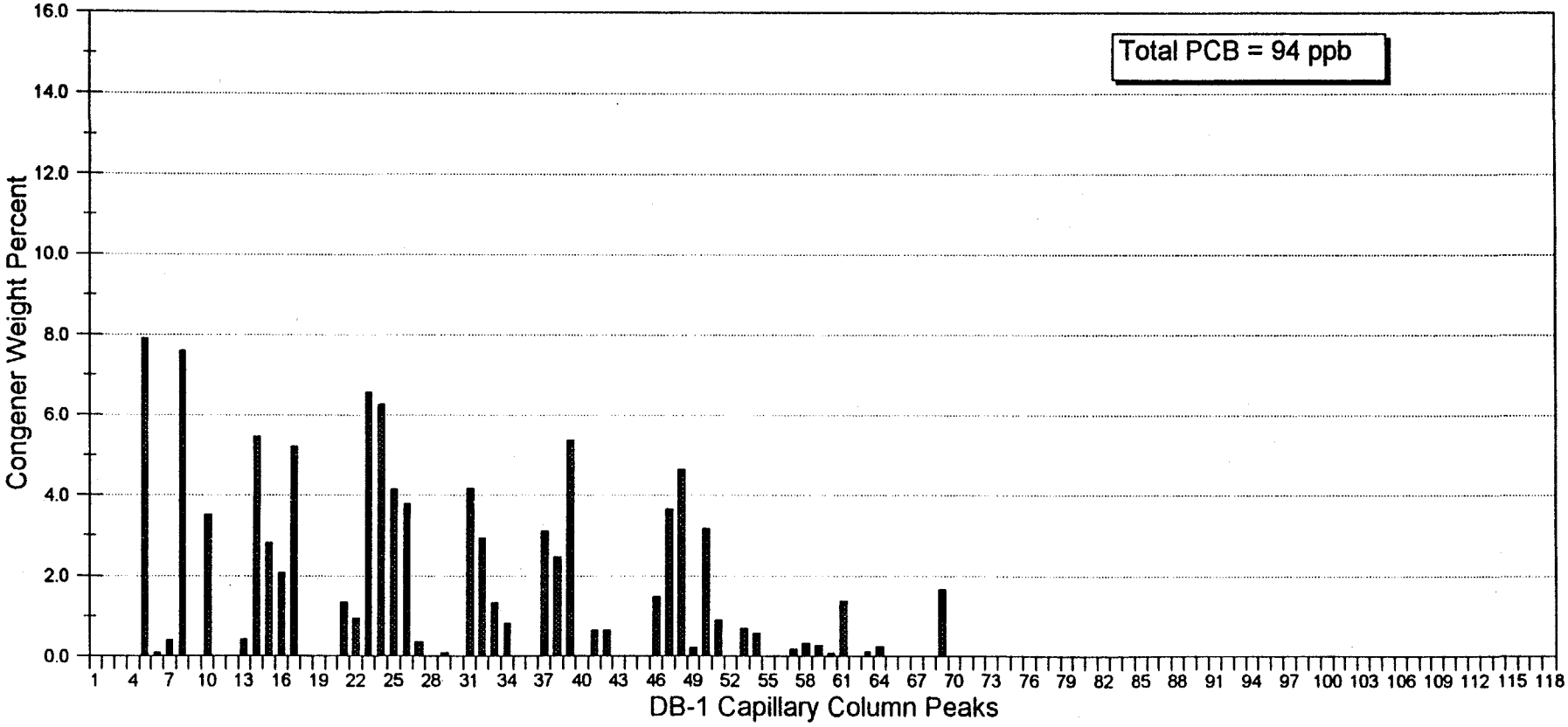

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Hudson River Project River Monitoring
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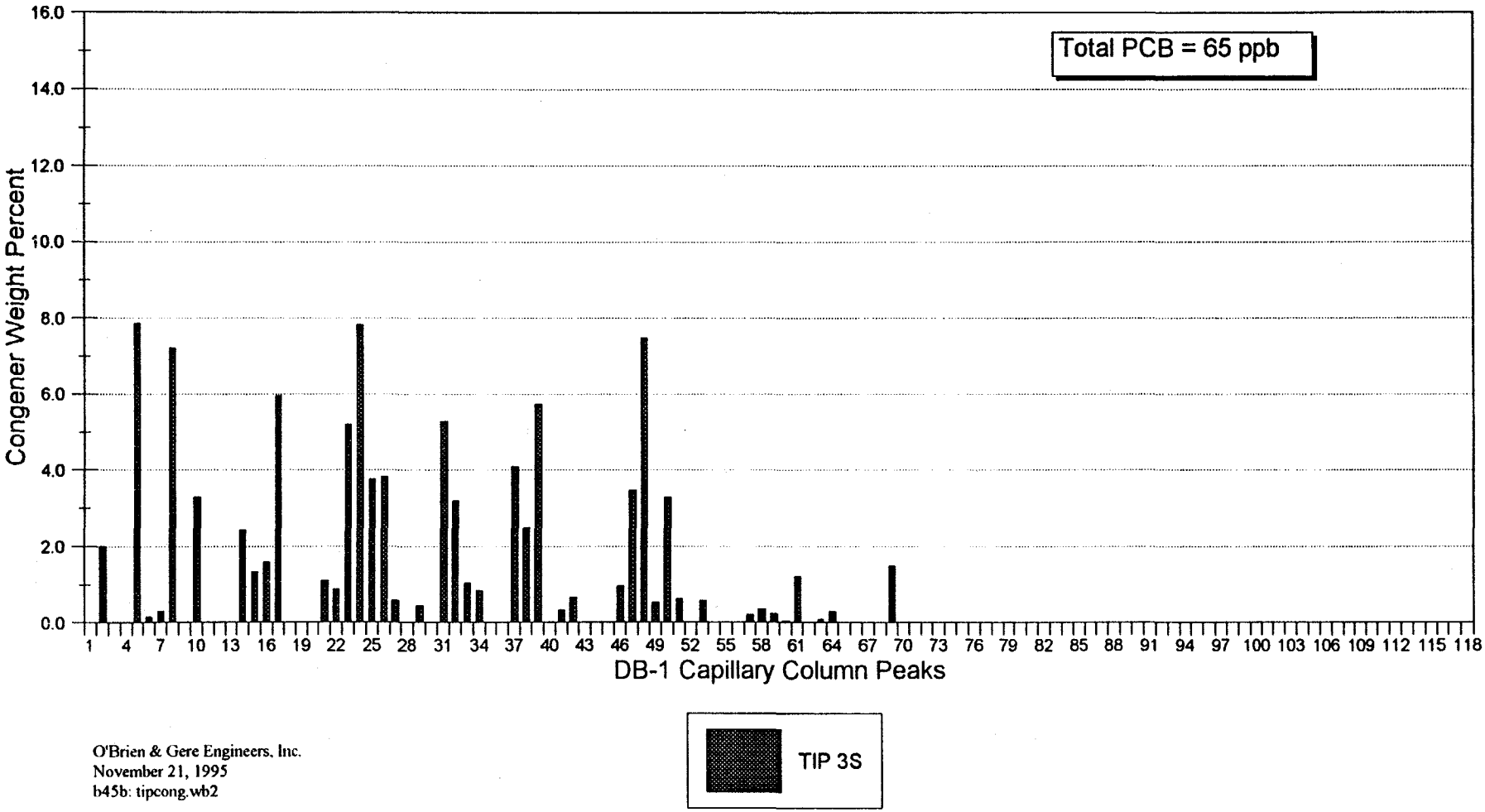

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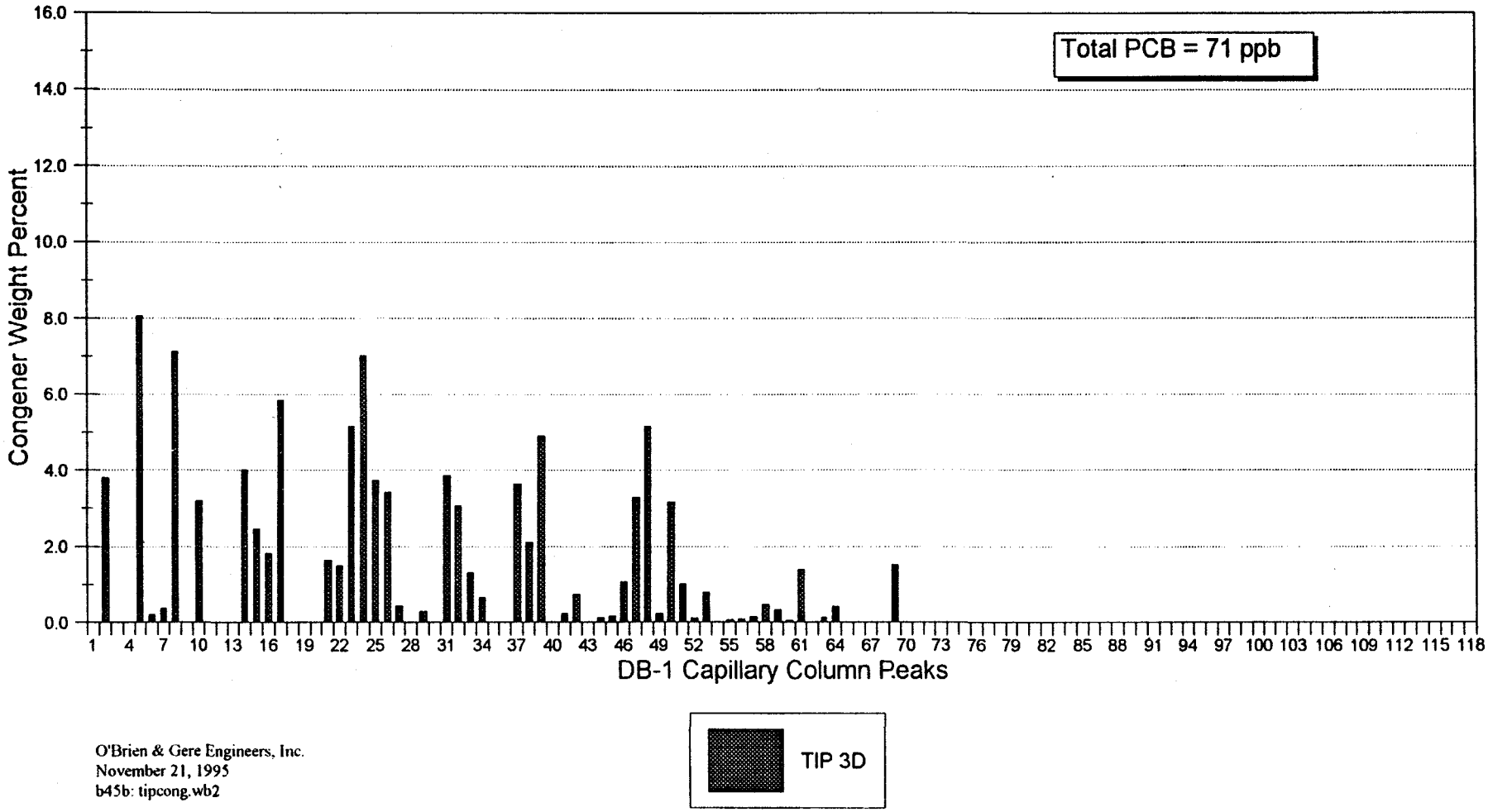

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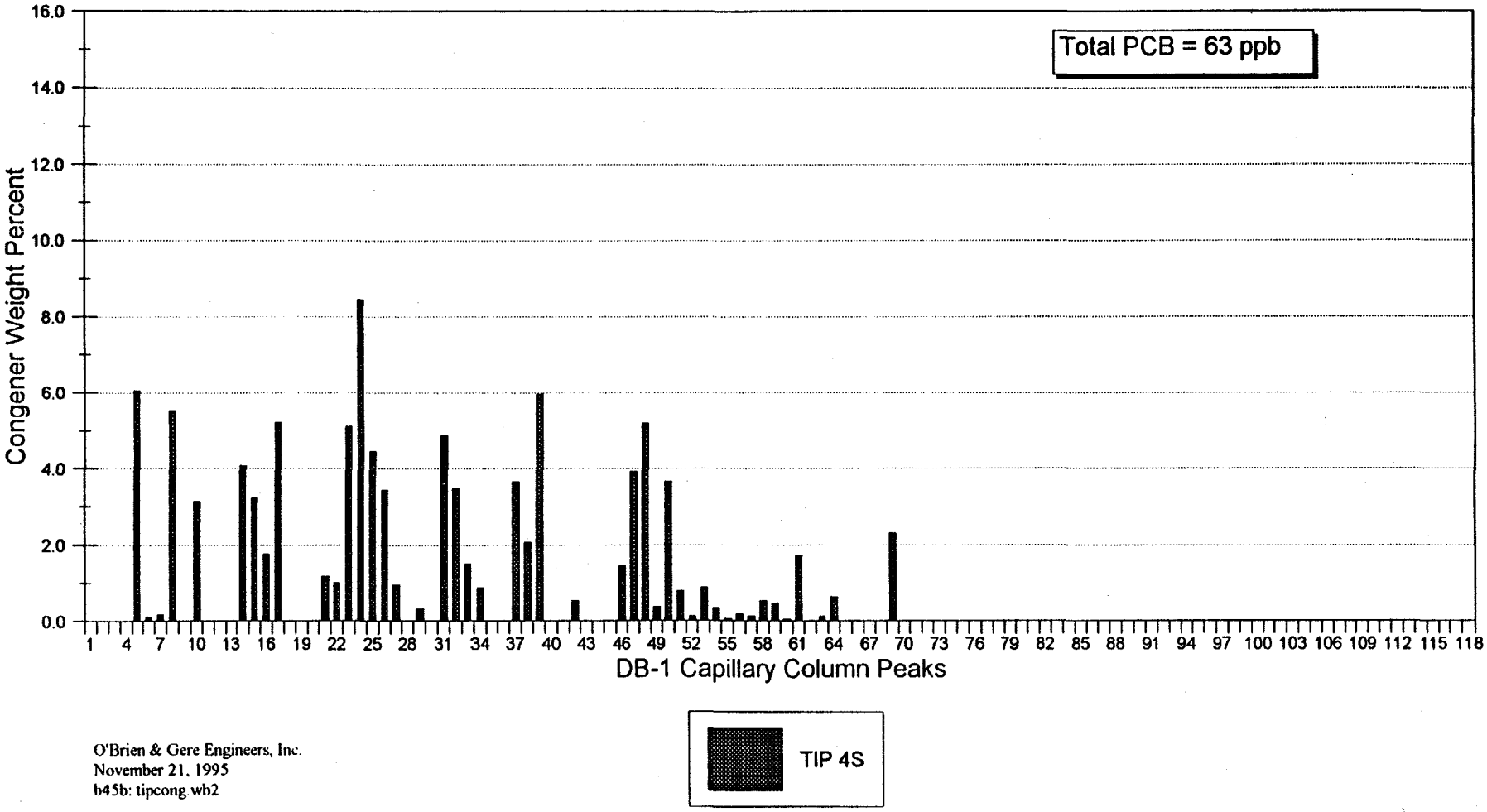

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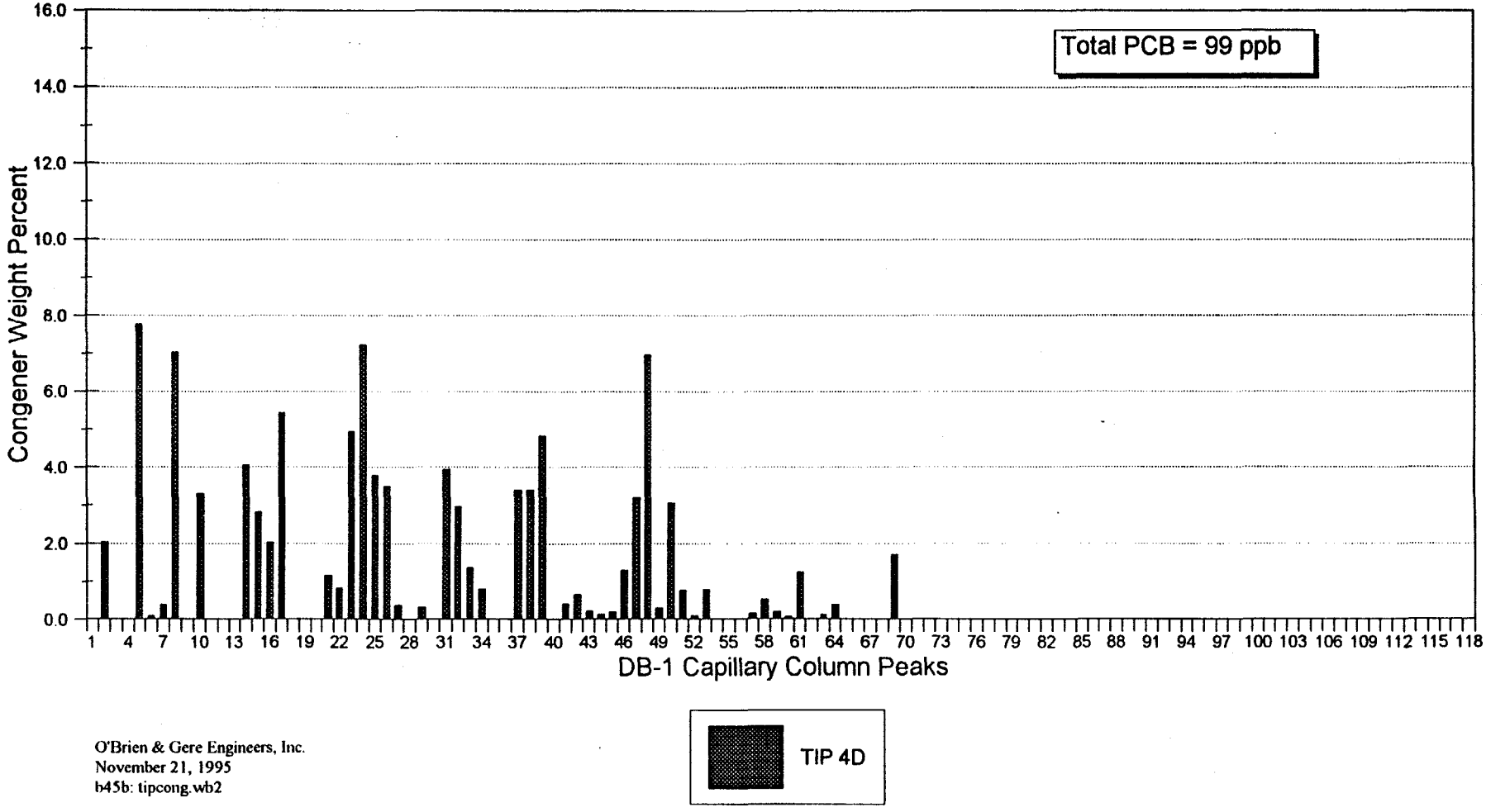

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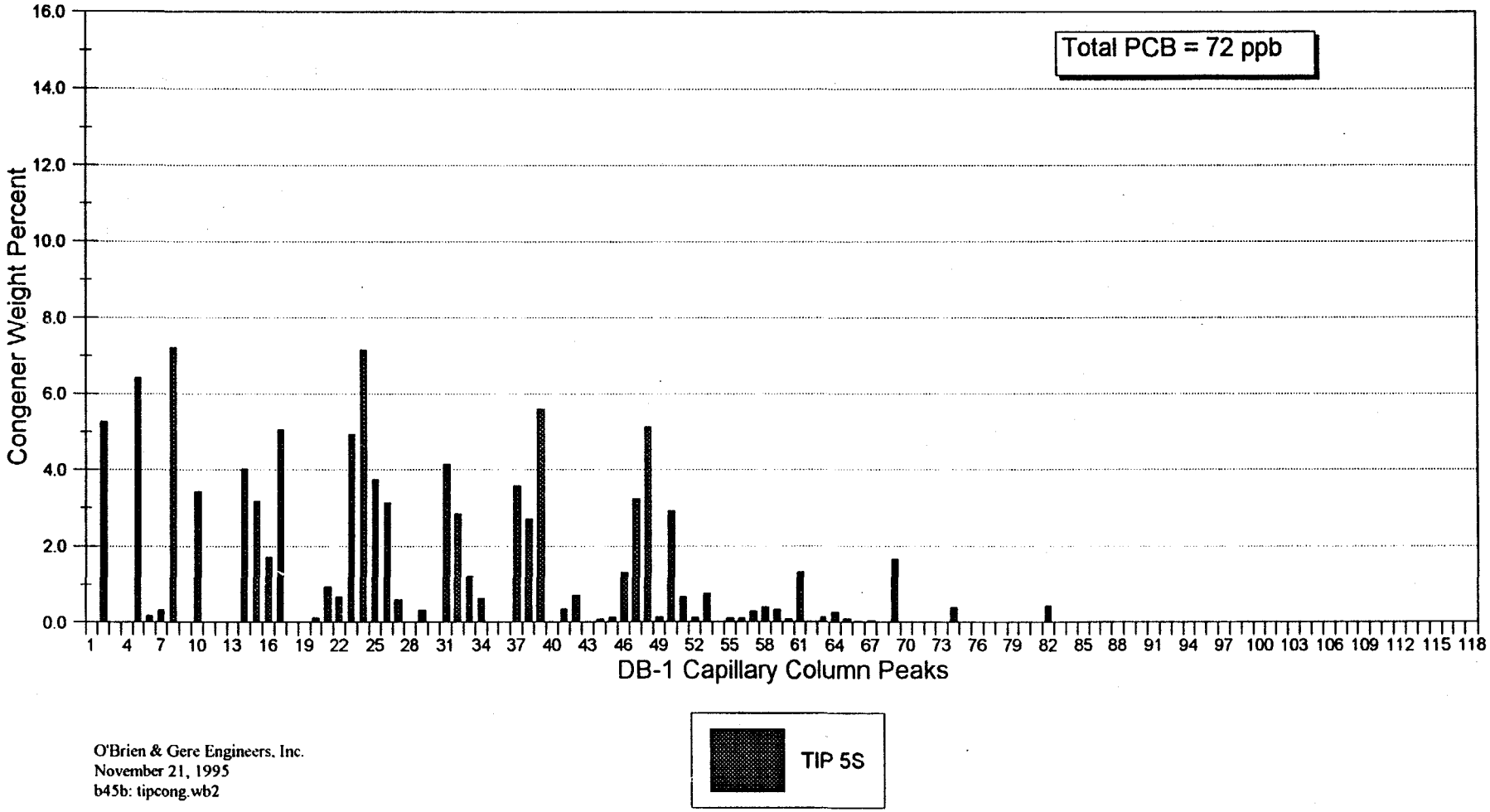

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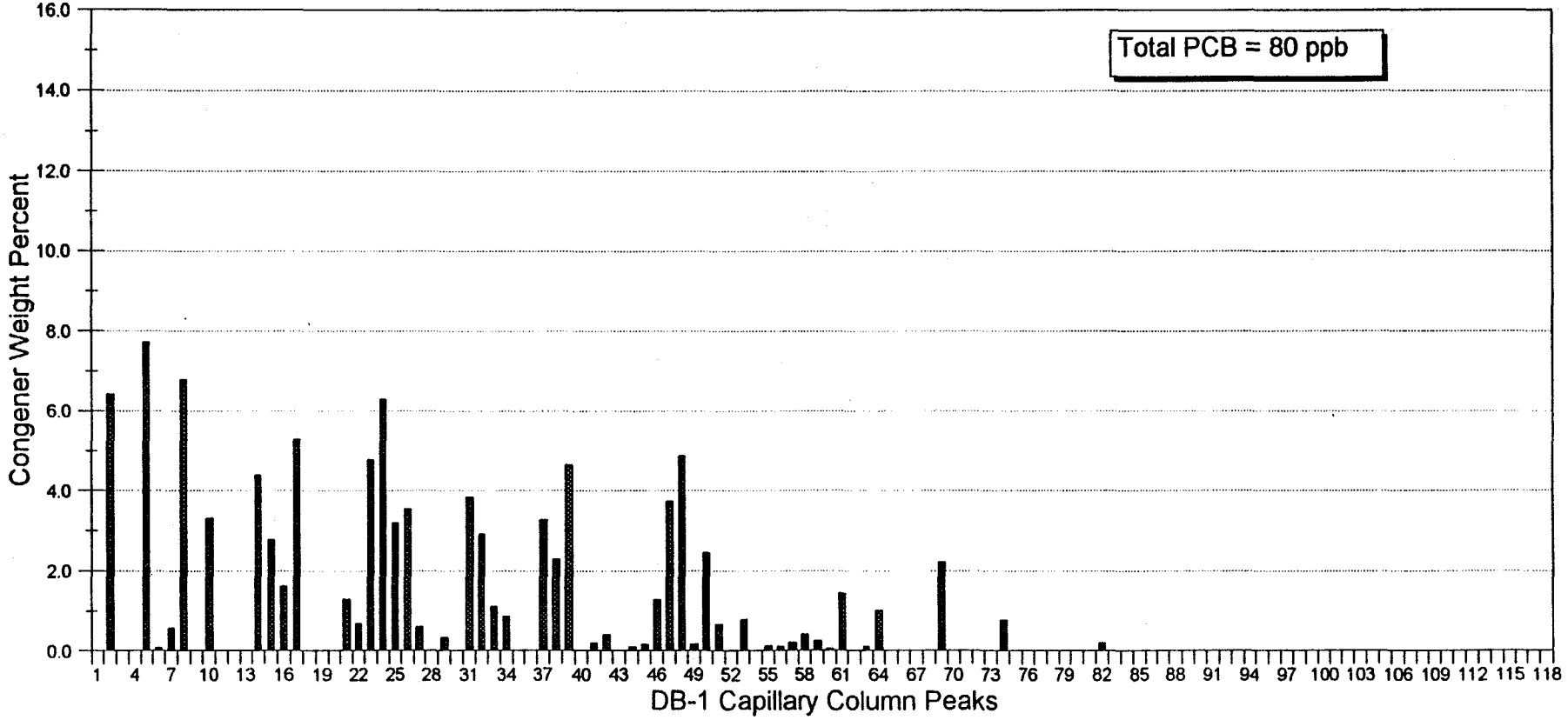
TIP Congener Distributions 9/7/95



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Hudson River Project River Monitoring
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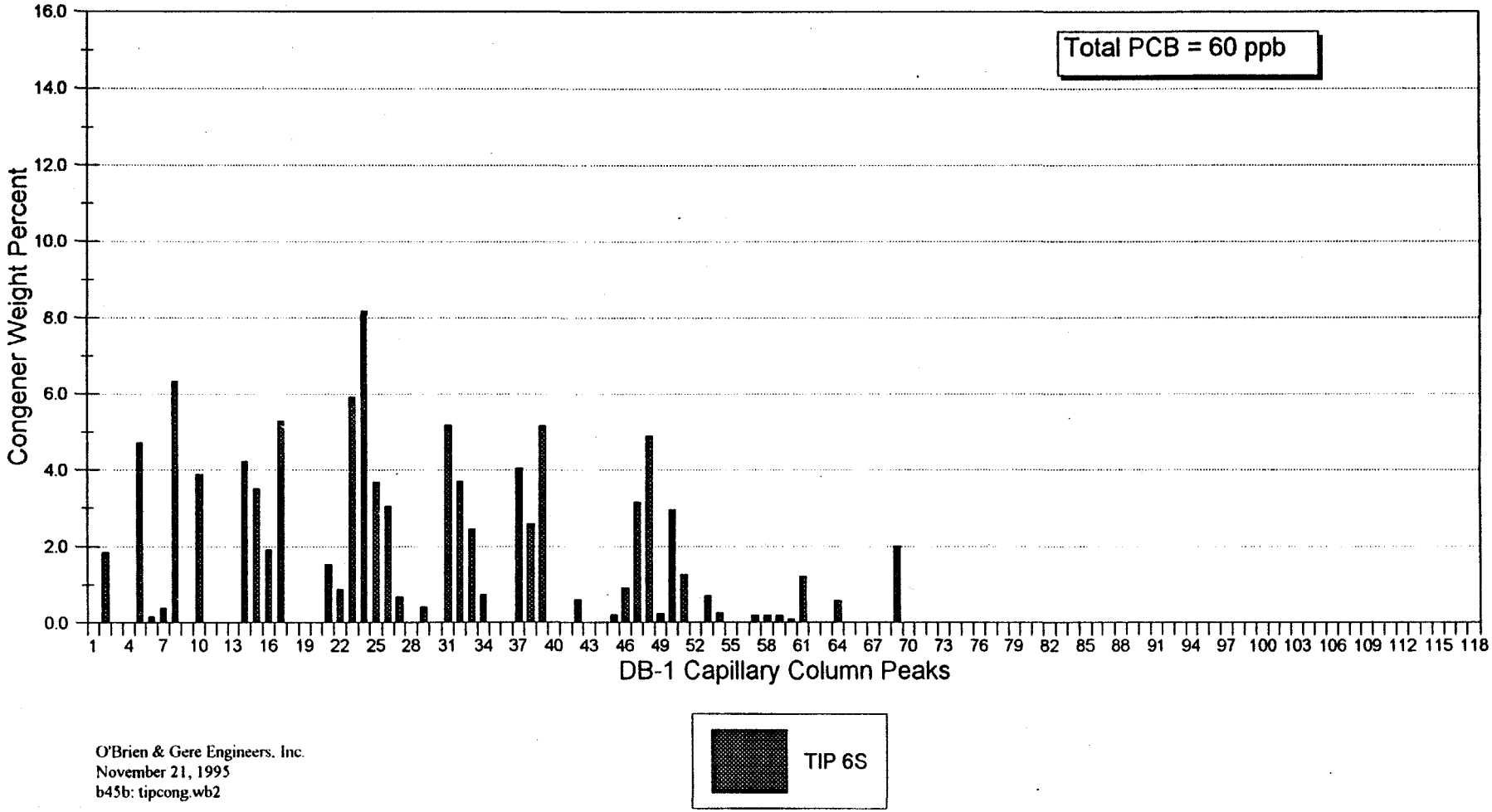

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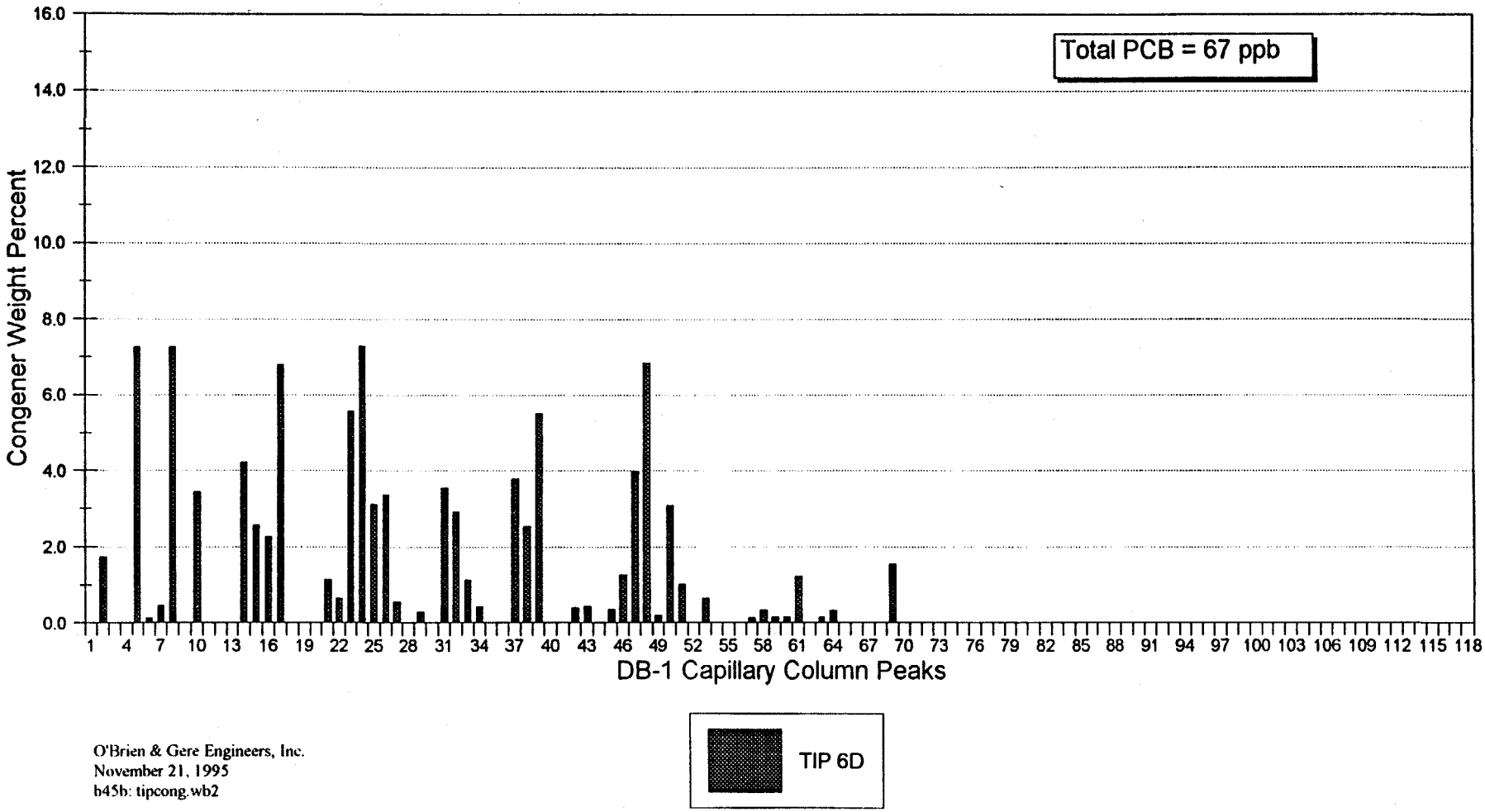

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General Electric Company

Hudson River Project River Monitoring
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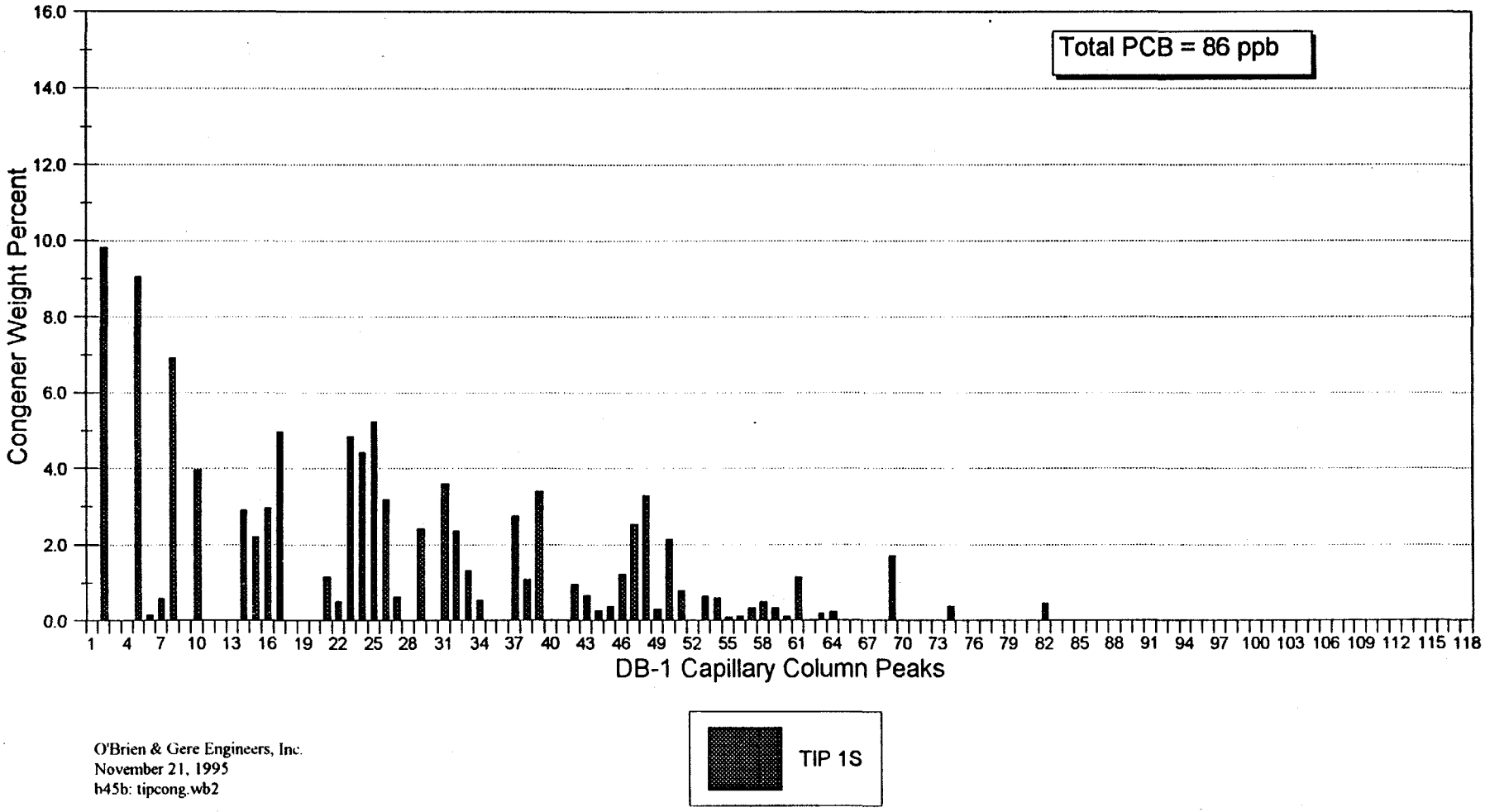

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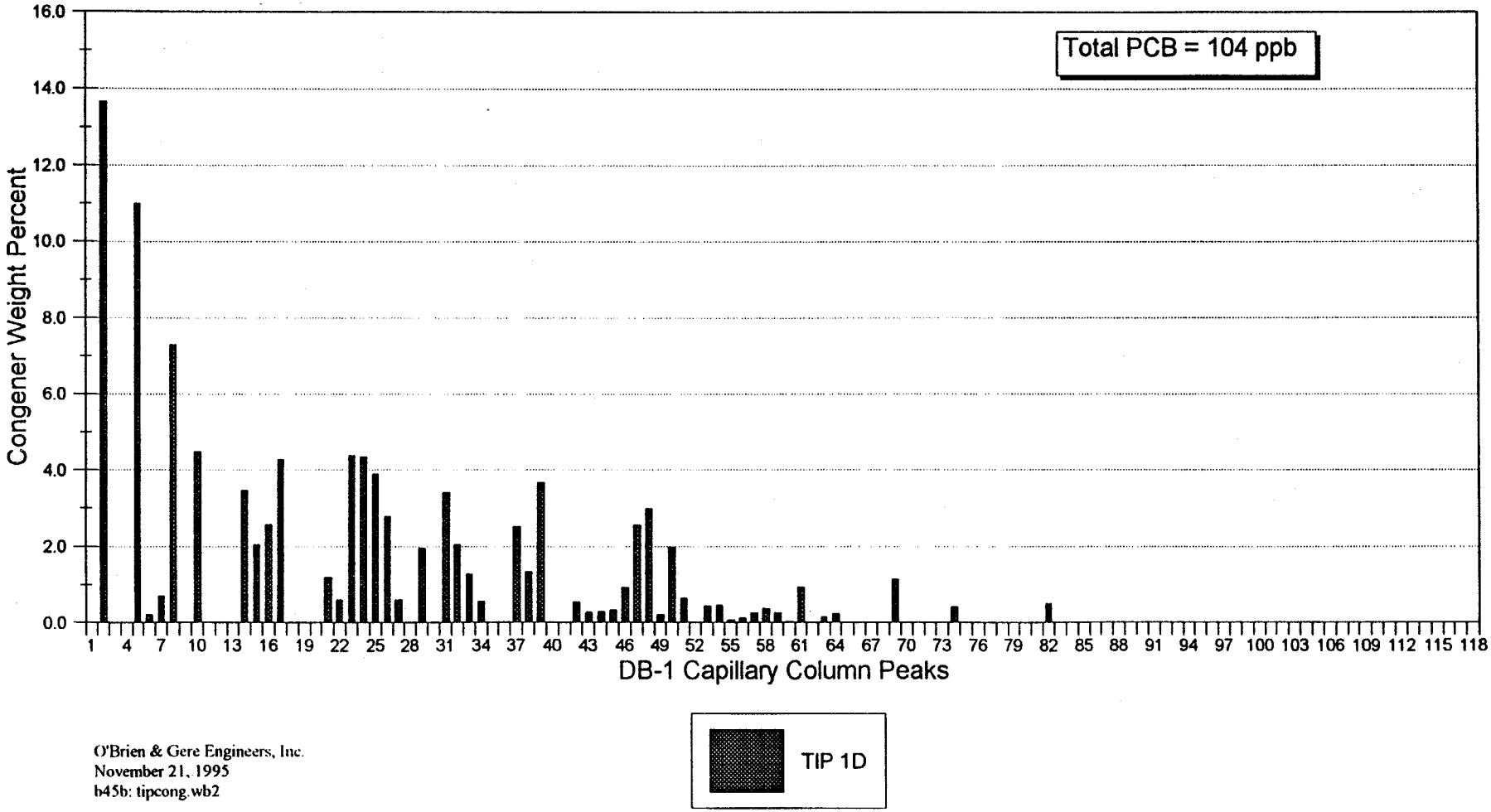

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321124

General Electric Company

Hudson River Project River Monitoring
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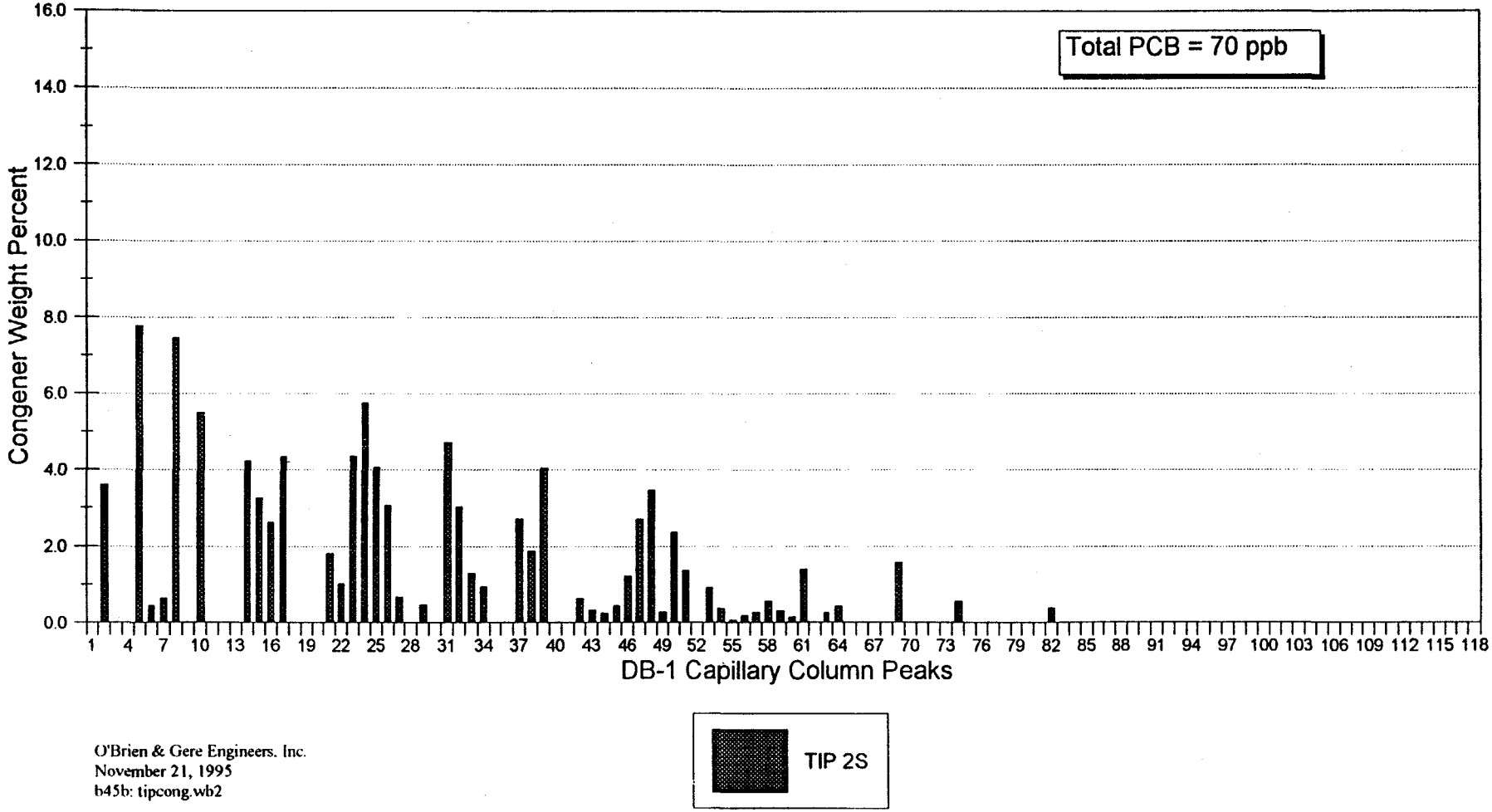

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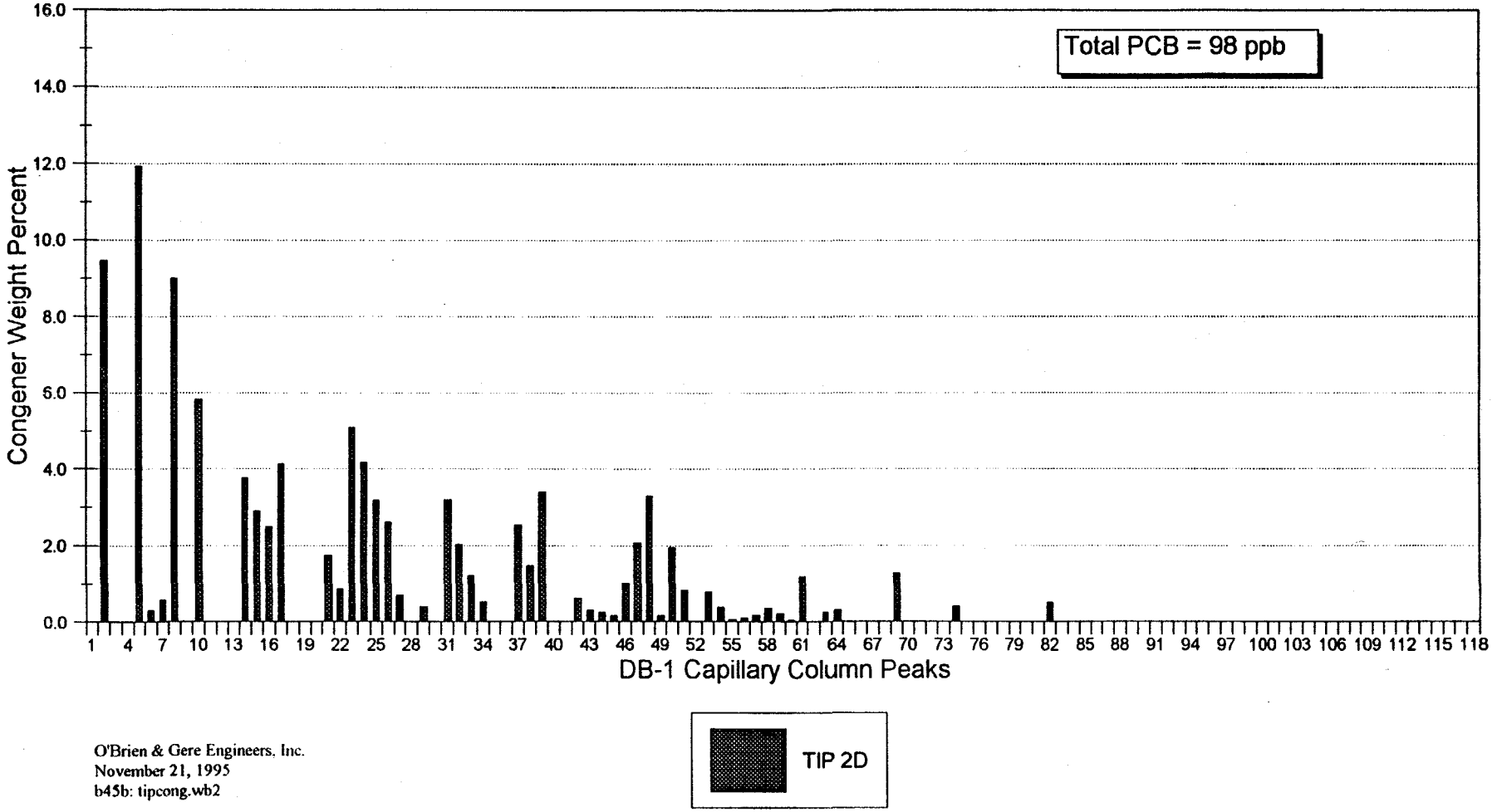
321125

General Electric Company

Hudson River Project River Monitoring
TIP Congener Distributions 10/4/95



O'Brien & Gere Engineers, Inc.
November 21, 1995
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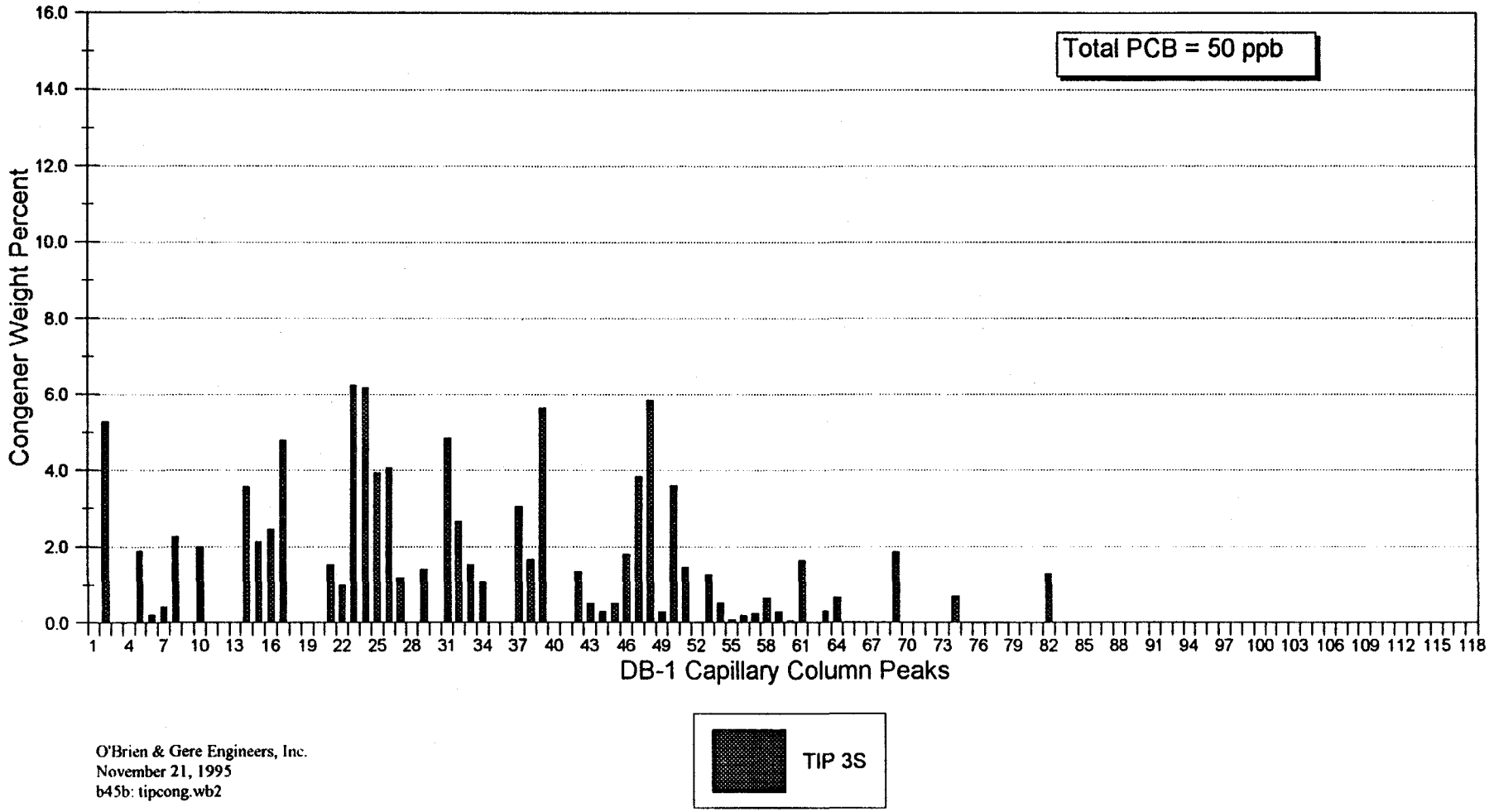
General Electric Company

Hudson River Project River Monitoring
TIP Congener Distributions 10/4/95



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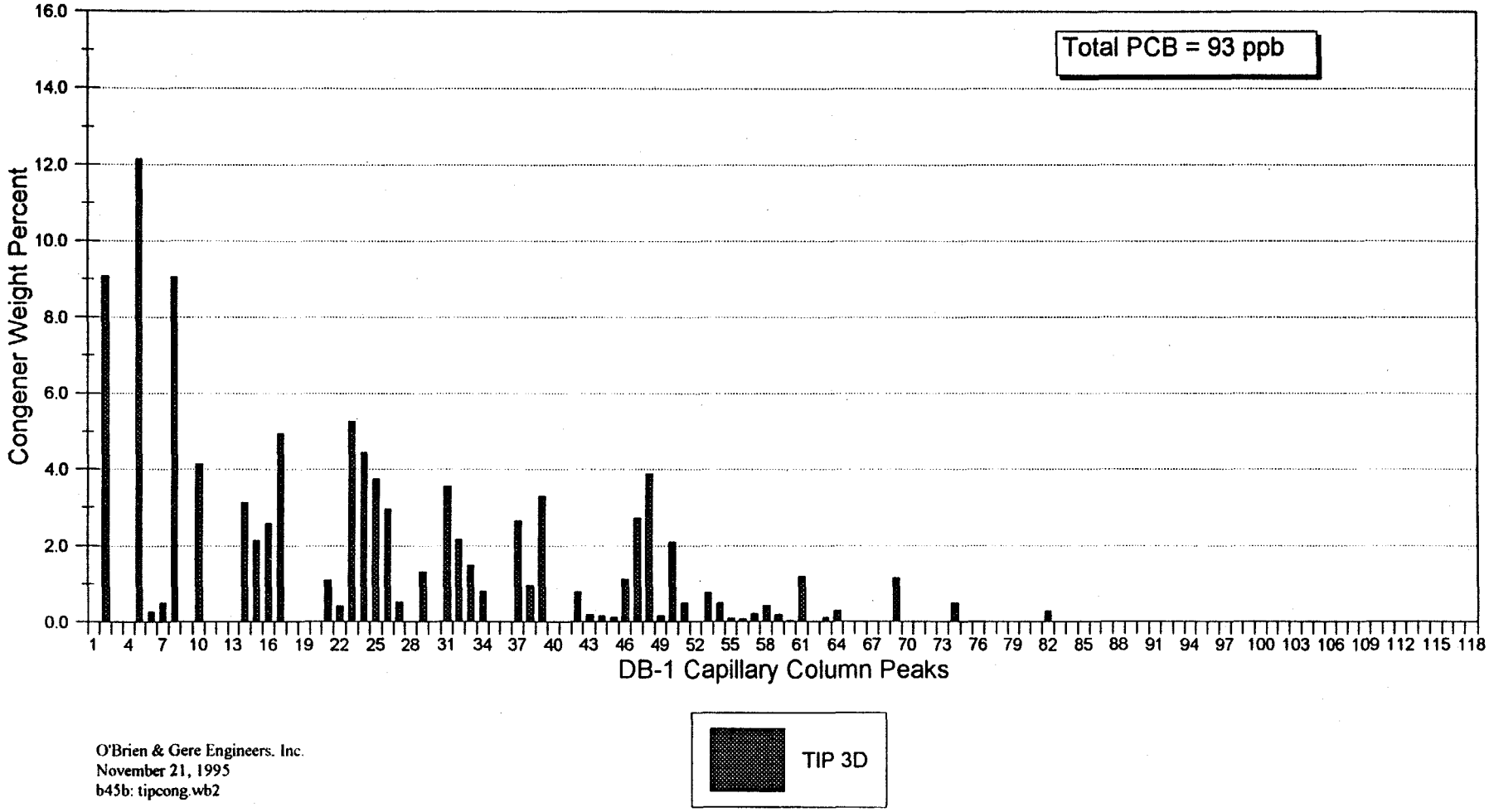
TIP Congener Distributions 10/4/95



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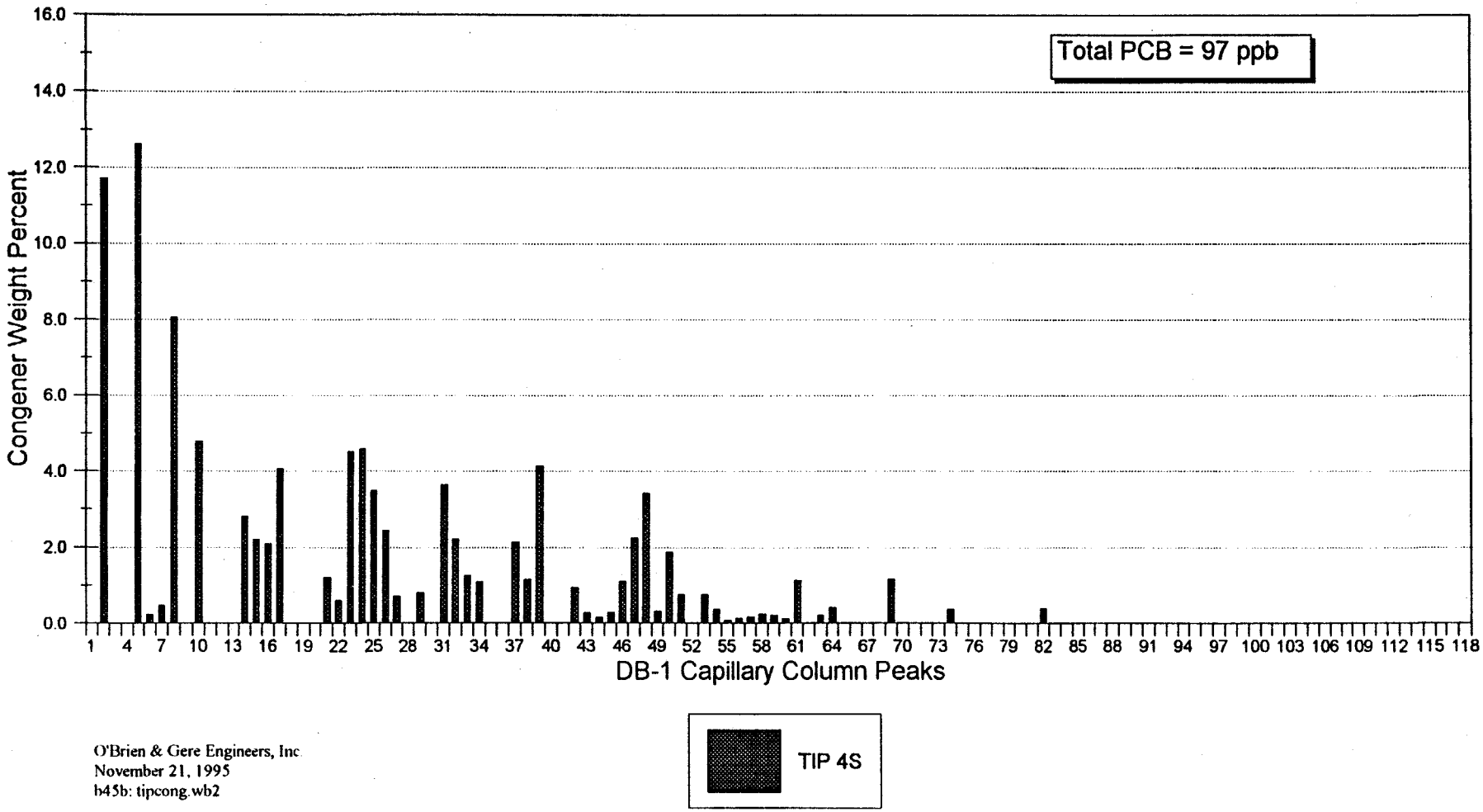

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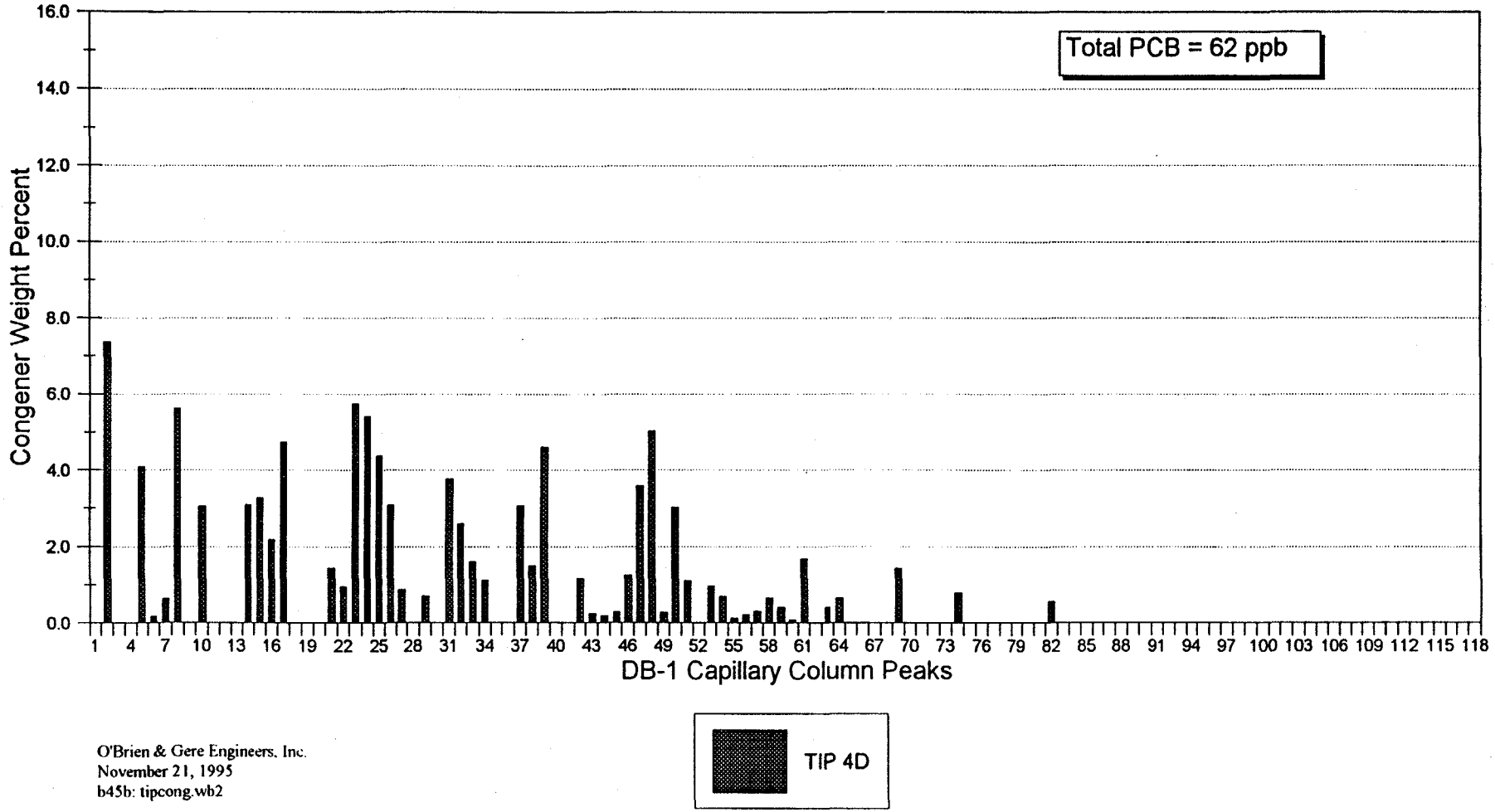
TIP Congener Distributions 10/4/95



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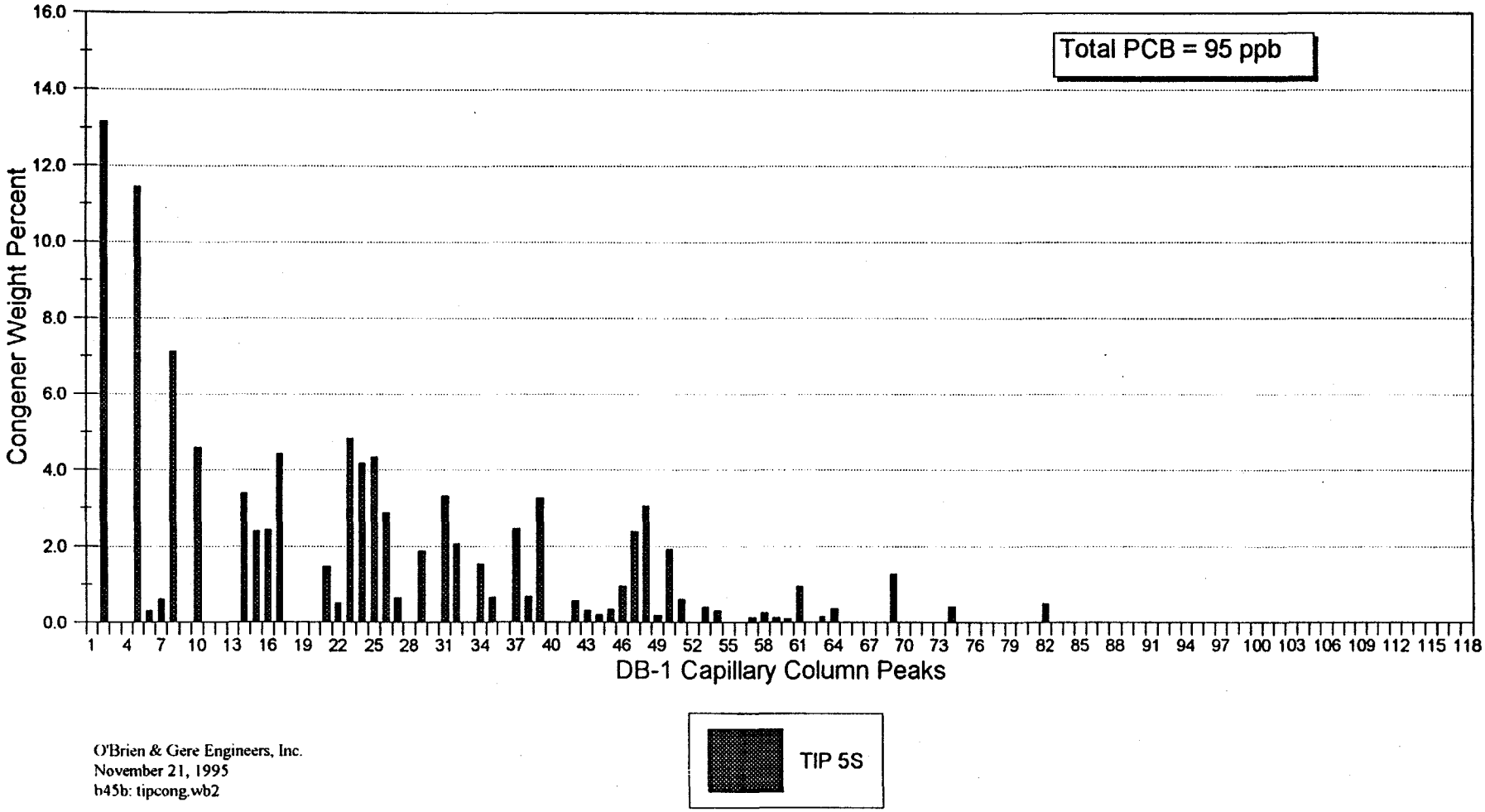
TIP Congener Distributions 10/4/95



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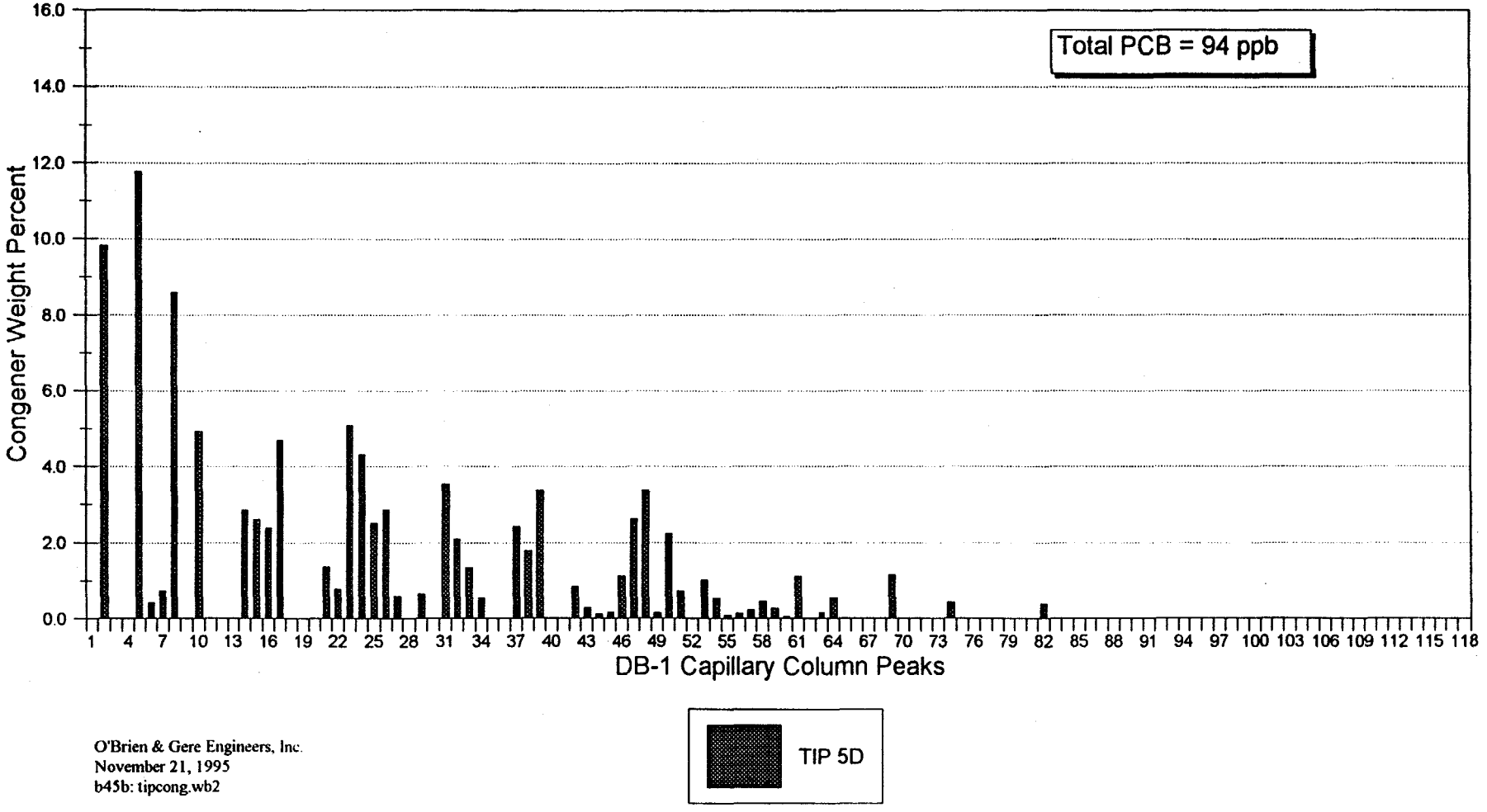
TIP Congener Distributions 10/4/95



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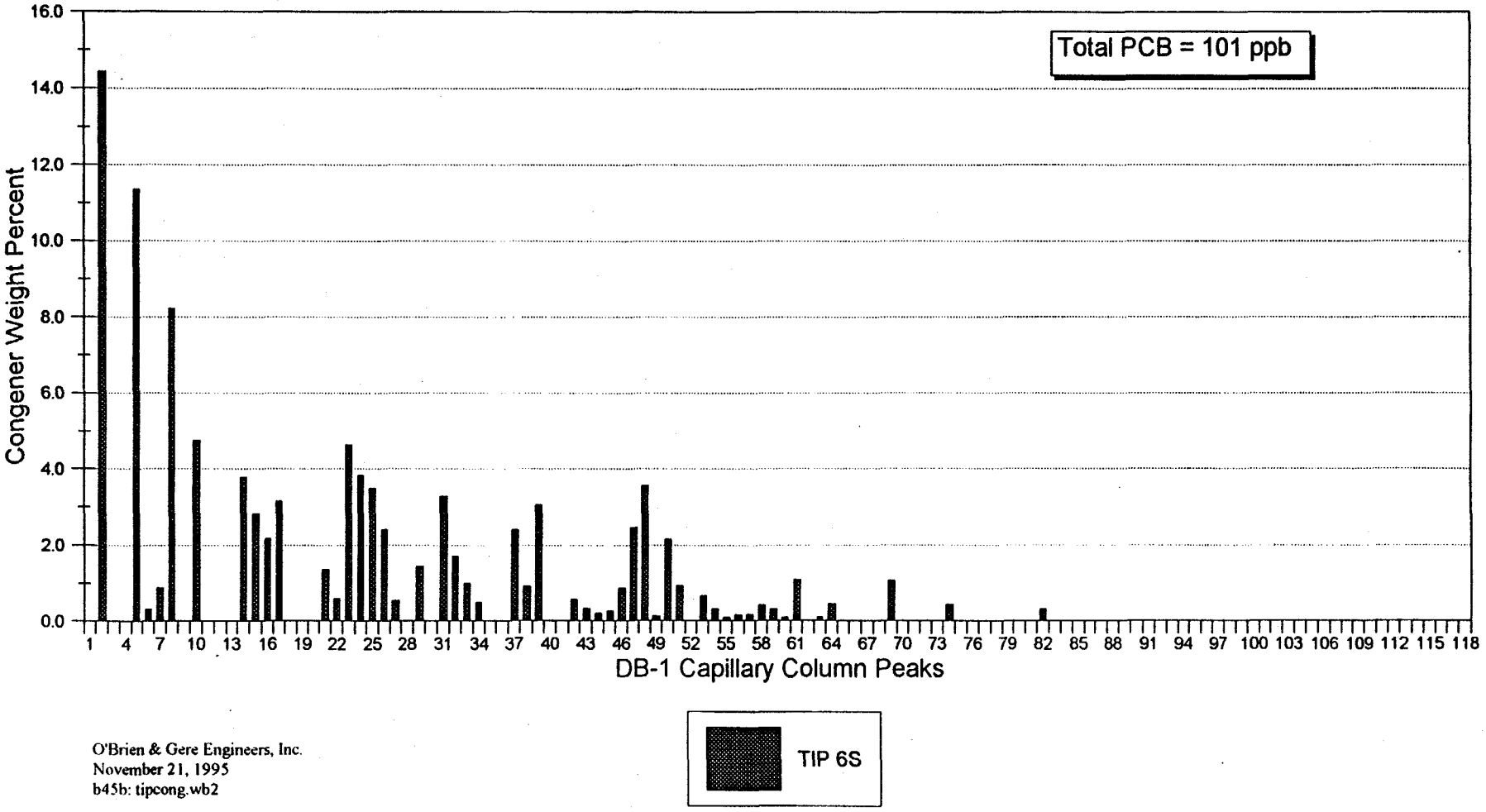

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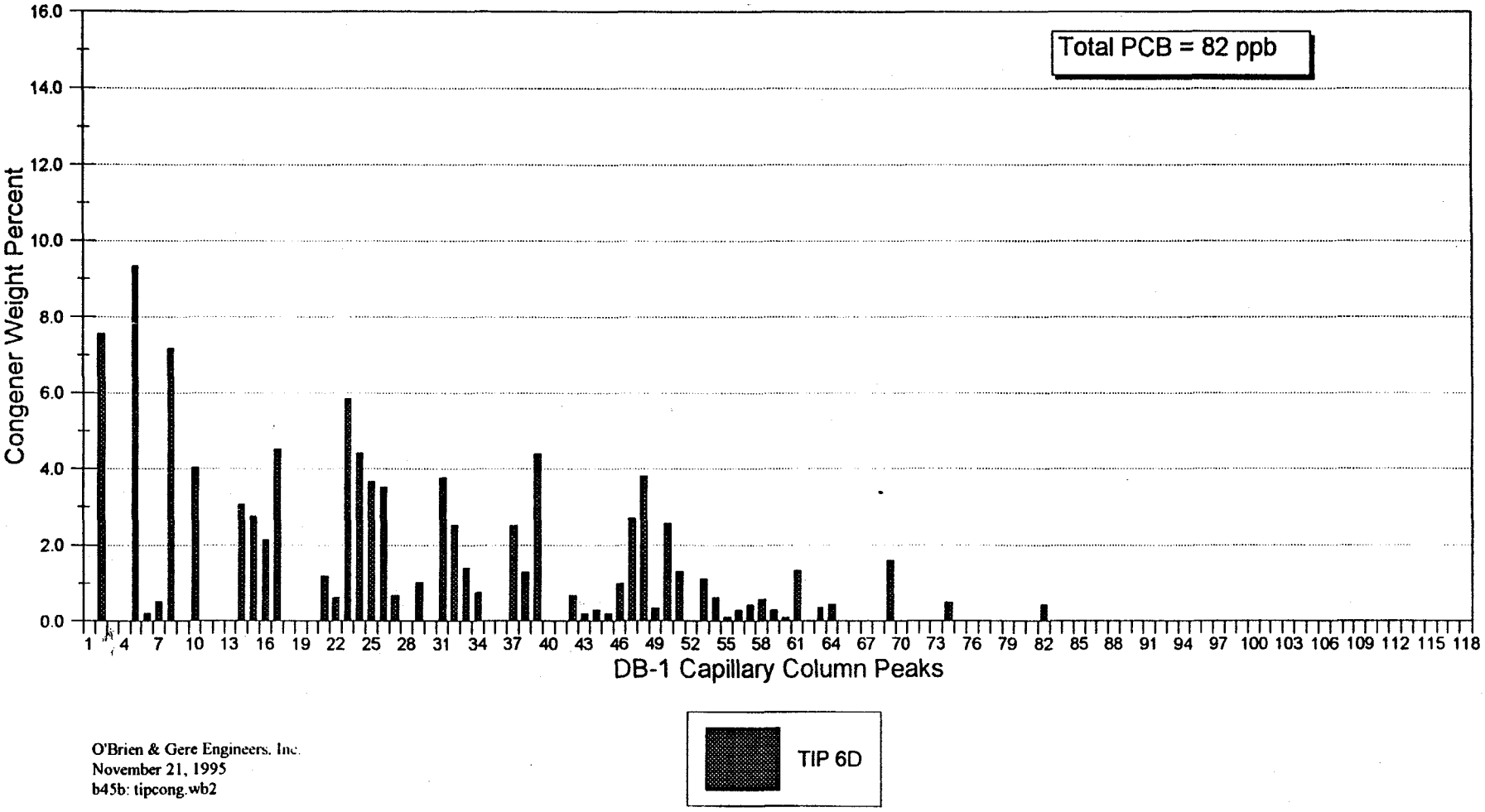

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