1. State the Problem
Supplemental data are needed to evaluate the character and extent of potential shallow soil contamination associated with specific former rubber plant facilities, and the magnitude of risk that is attributable to any such contamination. These data are needed to support both the Feasibility Study and the Risk Assessment for the Soils and NAPL Operable Unit. This work plan proposes additional focused soil sampling at locations where the footprints of these former rubber plant facilities are currently accessible. The former facilities targeted for sampling are identified and described in Table 1 with the analytical testing program rationale.

2. Identify the Decision
The information gained from this supplemental sampling program will be incorporated into the project database and used to revise the Draft Risk Assessment. The data and results of the Risk Assessment will be used to identify areas of the site that will be incorporated into the Feasibility Study to evaluate remedial alternatives for addressing any contamination that may pose unacceptable risks to present or future occupants of the site.

3. Identify the Inputs to the Decision
The inputs to the decision will be the validated laboratory testing results of soil samples collected during this supplemental sampling program, the existing data in the project database, and the results of the Risk Assessment. STL Reporting Limits compared to EPA Region 9 PRGs for all analytes in the supplemental sampling program are presented in Table XXX of Appendix C.

4. Define the Boundaries of the Study
The boundaries of the Study are the outlines of each former facility targeted for sampling, as identified on Plate 1. The locations of former facilities are accurately depicted on Plate 1, based on historical facility drawings and photogrammetric analysis of historical aerial photographs.

5. Develop a Decision Rule
The data collected will be used in the risk assessment’s Exposure Point Concentration (EPC) calculations. A separate EPC is calculated for each parcel or set of parcels that form Exposure Areas of Potential Concern (EAPCs). See Figure 2 of draft Risk Assessment for map of EAPCs. Each EPC was calculated by comparing the 95% upper confidence limit (95UCL) of the arithmetic mean (for the chemical concentrations of the Contaminants of Potential Concern for that EAPC) to the maximum observed concentration, and using the lower value. The 95UCLs are determined using either the t-based confidence interval, the Land confidence interval for lognormal distributions, or the Chebychev conservative confidence interval. If the distribution of a data set best fits either the t-based or Land intervals, then the best fit there is used. If not, the Chebychev formula is used. Best fit is defined through the Shapiro-Wilk goodness-of-fit test as a p-value >= 0.05.
A decision will be made that shallow soil contamination at individual targeted former facilities has been fully characterized for use in the Risk Assessment and Feasibility Study when all of the following conditions are met: 1) Uncertainty in calculated exposure point concentrations derived in the Risk Assessment is reduced from "high" to either "low" or "moderate" at the subject parcel, 2) Laboratory data are generated for all accessible sampling locations, and step-out locations as specified in the this work plan addendum, and 3) Laboratory data are of sufficient quality for use in the Risk Assessment and Feasibility Study, as determined by the data validation process (Quality Assurance Project Plan Addendum, Appendix C).

Section 7 of the Draft Baseline Risk Assessment (URS, 2001), includes a complete description of how uncertainty in exposures point concentrations at each parcel is qualitatively evaluated. Essentially, four types of uncertainties are combined to determine the overall uncertainty for the EPCs. The four types are spatial representation uncertainty (which is weighted higher than the others), detection limit uncertainty, distribution assumption uncertainty, and transport modeling uncertainty. The additional field sampling directly impacts the spatial representation aspect of the overall uncertainty. The spatial representation uncertainty is determined by examining the spatial distribution of the sampling on an EAPC and identifying whether the distribution is uniform or clustered. If uniform, it is considered low uncertainty. If clustered around all potential sources (based on historic information about the factory operations), then it is also low uncertainty. If clustered around majority of potential sources but not all, then it is only low if it shows decreasing concentrations towards unsampled areas. If none of these conditions are met, the uncertainty is considered high. Intermediate cases deemed to be moderate uncertainty are EAPC’s where historic information suggests that the worst case areas probably were sampled, and concentration patterns support that suggestion.

The additional field sampling is targeted to decrease the EPC uncertainty by decreasing the spatial representation uncertainty. This is done by clustering samples at previously unsampled potential source locations, so identified based on historic knowledge about factory operations and facilities.

6. Specify Tolerable Limits on Decision Errors
This step is not applicable to this supplemental investigation. The sampling approach is not of a statistically based design nor is hypothesis testing envisioned. Instead the sampling design is based on professional judgement, familiarity with historical plant operations, and environmental data gathered during the various previous sampling efforts at this site.

7. Optimize the Design for Obtaining Data
A description of the sampling and testing program design and rationale is presented in Section 4.

The text to be inserted in Section 4 is:
"A minimum of one soil boring is located within the footprint of each accessible targeted former facility, while larger facilities have multiple borings in a grid pattern with a maximum spacing of approximately 50 feet. While any characterization program can fail to detect contamination that is present, the planned boring spacing is judged adequate to evaluate the potential presence of pervasive contamination associated with releases from the targeted former facilities. The investigation is designed to collect a limited number of samples in the locations that represent worst-case conditions for the parcels of interest. This was accomplished by (1) preparing a high-quality map accurately portraying former rubber plant facility locations relative to existing surface features; (2) locating the soil borings within the footprints of the targeted former facilities; and (3) incorporating the methodology of utilizing continuous coring and systematic inspection and field screening of the soil to allow selection of "worst-case" samples wherever possible."