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27 July 1989

Mr. Michael Towle (3HW12)  
U.S. Environmental Protection Agency  
Region III  
841 Chestnut Building  
Philadelphia, PA 19107

Dear Mr. Towle:

In compliance with the August 10, 1988 Administrative Order by Consent, Roy F. Weston, Inc. submits ten copies of the revised Remedial Investigation Site Operations Plan (RISOP) for Commodore Semiconductor Group for your review and approval. This revised RISOP includes the additions and clarifications required in EPA's June 23, 1989 Comments letter. The location of each addition or clarification to a specific comment is attached. Three copies are being mailed to PADER under separate cover as per your request.

Very truly yours,

ROY F. WESTON, INC.

*John R. Marks for*  
Katherine A. Sheedy, P.G.  
Project Director  
Vice President

KS:mdd

AR300570

THIS document  
identifies location  
in RISOP where Weston  
made revisions

COMMODORE SITE  
REMEDIAL INVESTIGATION SITE OPERATIONS PLAN

EPA COMMENTS

1. GENERAL - Several activities outlined in the EPA-approved work plan and discussed in detail at several meetings between EPA, Commodore and other involved parties do not appear in the RISOP or require more detail. All activities outlined in the work plan must be detailed in the RISOP. The extent of detail required is contained within the body of these comments. The RISOP also contains some inconsistencies which must be corrected.

The Central Regional Laboratory has recommended that the RISOP be resubmitted. The "deficiencies" are noted in the checklist attached to this letter and given previously to Weston. The laboratory's comments follow the same format of the review checklist given previously to Weston. EPA requests the RISOP, QAPP and H&SP be revised to include the concerns of the laboratory.

The format and presentation of the RISOP makes it somewhat difficult to locate specific tasks. EPA strongly recommends a summary ~~Table of tasks, subtasks, etc.~~ be incorporated into the early sections of the document. The table should list all activities (e.g. continuous water-level monitoring) and the specific location(s) within the document where the operational details can be found. The Table of Contents can be further detailed in lieu of such a table (e.g. include separate references to residential well sampling). It is unclear from the table of contents if TAL compounds will be analyzed, while halogenated organic compounds are specifically referenced.

Table 1-1  
Sub  
Section 1.3.3

**ACTION** - Weston has already begun to prepare a summary table.

A reference to a "sampling plan" on page 1.1-3 of the RISOP must be clarified. The consent order references a sampling plan.

p. 1.1-4

**ACTION** - Elaborate on definition of sampling plan and indicate that RISOP is the sampling plan.

A schedule must be placed in the RISOP. If exact dates cannot be provided, a schedule indicating relative time must be developed. Should EPA's review of the revised RISOP extend beyond the scheduled start date, an updated schedule will be required. EPA requires a schedule be placed in the RISOP.

Subsection  
1.3.3

**ACTION** - Weston has already prepared a schedule.

AR300571

**2. MISSING INFORMATION** - Several RI/FS field activities within the approved RI/FS work plan are neither detailed nor mentioned in the RISOP. Section 1.3, Site Operations Procedures, details how RI/FS tasks will be completed and documented, but the following approved RI/FS activities are not included:

A. Surface water stations - Section 4.2.7 of the approved RI/FS work plan indicates that water-level data from 3 USGS stream gauging stations will be included in the water-level investigation at the site. This information is not in the RISOP.

Subsection  
1.3.6  
✓

Note that EPA originally requested installation of elevation stations at the Schuylkill River and tributary (Lamb Run). The Lamb Run station was proposed to help determine the relationship between ground water and surface water near the site. Weston responded to EPA's request by including three USGS stations along the Schuylkill River in the water-level investigation. EPA requests one stream/staff gauge be installed, if necessary, in the Schuylkill River. EPA requests the installation and survey of a similar device in the tributary near the site. Surface water elevations from both of these stations should be tied in with ground water elevation data.

**ACTION** - Weston will "install" a gauge at a suitable location in Lamb Run. EPA will not require 3 locations in the Schuylkill River. One location in the Schuylkill River will be used if necessary.

B. Continuous Water-Level Monitoring - Section 4.2.7 of the approved RI/FS work plan indicates that a continuous water-level recording device will be placed in a well to monitor long term effects on the water level on a constant basis.

Subsection  
1.3.6

The RISOP makes no mention of this activity. EPA requests the installation of at least one continuous water-level monitoring device in a deep monitoring well near the suspected source location. EPA recommends the device should be left in the well for at least one year. The clock should be set in such a way that the frequency at which chart paper needs to be changed could be minimized. However, the speed should be increased for two one-week periods to monitor short-term fluctuations. The one-week periods should occur during seasonal high and seasonal low water table. The RISOP must include an SOP for continuous water-level monitoring. A similar device is recommended for installation in a shallow well.

**ACTION** - Weston will install a recorder in a well (probably MOS-11). The recorder will remain in the well from March 1990 to October 1990. Scale changes will be considered.

C. Status of pumping wells - The RISOP must indicate the status of nearby pumping wells will be determined during the collection of water level information. This task is contingent

Subsection  
1.3.6  
APR 30 1990 572

upon Commodore receiving access to the well locations during the RI/FS.

**ACTION** - Weston will determine the pumping status of wells. At minimum they will listen to hear if the equipment is operating.

D. Well location and construction rationale - The work plan contained no information supporting the design of a ground water monitoring network. EPA requested this information be provided in the RISOP. A table supporting the rationale behind the design of the ground water monitoring network must be placed in the RISOP.

Subsection 1.3.12

**ACTION** - The rationale presented by Weston on June 21, 1989 is satisfactory. Weston will detail this information in the RISOP.

**3. BASE MAPS** - Section 1.3.2 and Appendix A discuss the development of base maps. EPA approved of the proposed scale, coverage, contour interval and identification for the local and regional base map after Weston submitted a draft of that section of the RISOP which dealt with the preparation of base maps.

A. Section 1.3.2 discusses the development of the base maps and indicates that the coverage for each map will extend a certain radius from the center of the site. The center of coverage should be the same for both the local and regional base maps. According to figures 1-19 and 1-20, the center of coverage for the local base map is almost 1000 feet from the center for the regional map. EPA, however, assumes Weston will develop both base maps around the same "center". Figures 1-19 and 1-20 must be revised to indicate that the center of the site is known and is the same for both maps.

Subsection 1.3.4

**ACTION** - The reference to the center of the site will be removed since the areal features are more important. Map coverage on all sides of the site is satisfactory.

B. The scale on figure 1-20 and 1-21 is incorrect.

Corrected

**ACTION** - Weston will correct the scale on figures.

**4. WELL SURVEY** -

A. The approved RI/FS work plan requires existing well locations to be surveyed to 0.01 foot (subtask 4.8). At a meeting on 1/11/89 it was agreed that all surveying and measuring work would be accurate to accepted standards for particular instrument use. The RISOP incorrectly calls for measurements to the nearest 0.10 foot during well surveys (1.3.16). EPA also requested all new survey data be consistent with old survey data.

Subsection 1.3.4

AR300573

EPA requests all measurements be obtained and reported to the nearest 0.01 foot to be consistent with industry and equipment standards and to be comparable with existing site information.

**ACTION** - Weston intends to measure to 0.01 foot. The RISOP will be made consistent.

B. Please indicate in section 1.3.4 and 1.3.16 that permanent survey marks will be placed on the casing and grout apron, or other appropriate location, and will be recorded in the log book.

Subsection:  
1.3.6,  
1.3.18

**ACTION** - Weston intends to do this. The RISOP will be revised.

### 5. WATER-LEVEL MEASUREMENT -

A. Appendix B indicates that the total depth of the well will be measured 3 times to confirm the measurement. Why isn't the depth to water measured 3 times to confirm its measurement since this value seems more important than the depth of the well. Please clarify.

Subsection  
1.3.6

**ACTION** - The RISOP will be revised.

B. A schedule indicating the frequency and timing of collection of water-level data must be placed in the RISOP. Water levels should be collected on a monthly basis for the duration of the RI/FS and therefore will include both seasonal high and low water levels. The data management plan indicates that two rounds of data collection will occur.

Subsection  
1.3.6  
APP. B

**ACTION** - Weston has already prepared a summary table. Water levels will be monitored on a quarterly basis. Water levels will also be measured monthly April through October or bi-weekly March through July.

D. The device used to measure water levels at Commodore should be specified from the proposed list. The same type of device must be used for each round of data collection.

Subsection  
1.3.6  
✓

**ACTION** - Weston intends to do this. The RISOP will be revised.

E. As discussed previously, serious consideration should be given to modifying the discharge or electric line of pumping wells potentially impacting the site to include a device which will record the on/off schedule of the pumping well. EPA has determined that such devices do not currently exist on the wells, but current status can be determined. If installation of such a device is not feasible for the RI/FS, the RISOP document must

Subsection  
1.3.6

1.3.6 5.74

indicate the problem, propose another means of obtaining the information, and indicate how this data gap will affect the investigation. EPA will request Audubon Water Company's full cooperation and will hold a meeting with Commodore, Weston and Audubon Water Company to discuss the possible modification of the well head at the request of Commodore. Installation of these recording devices may be the only way to provide sufficient evidence of contaminant migration. The data obtained will be used to interpret fluctuations, if any, visible from the on-site water-level data

**ACTION** - EPA will discuss this issue with Audubon Water Company. No action is required.

F. In Appendix B, please indicate: 1) the same (type) device will be selected in the office each time data is collected from the Commodore site, and 2) the equipment will be decontaminated, placed on a dropcloth and allowed to air dry before use in the first well and each subsequent well.

Subsection  
1.3.6  
App. B

**ACTION** - This information may be in the documents. Weston will check and revise the documents as necessary.

G. An air monitoring device should be used to monitor air between the casing and protective casing depending upon the existence of vent holes in the casings. The well completion diagram should indicate the presence of vent holes in outer casings. As a safety measure this type of monitoring is recommended.

p. E-11

**ACTION** - The H&SP will include this.

H. An SOP for collection of continuous water-level data and surface water data must be inserted into the RISOP.

Subsection  
1.3.6

**ACTION** - The existing SOP for water level collection will be expanded.

I. The calibration procedures for the transducers and data loggers are not in the QAPP as suggested in section 4.4 of the QAPP.

1.160  
Subsection  
1.3.6

**ACTION** - The QAPP will be revised.

J. local precipitation events must be summarized in the RI Report. The RISOP must indicate if this information will be collected. Precipitation and subsequent infiltration might cause releases from the soil. The precipitation graphs should be consulted when evaluating the chemical data collected and during the RI/FS.

Subsection  
1.1.7

AP 300575

**ACTION** - Weston is collecting this data as part of the quarterly monitoring program. A reference in the RISOP is recommended.

K. The RISOP should state that water level information collected from open borehole wells represents the combined head information from several water-bearing zones. The use of this data must be qualified.

Subsection  
1.3.6 -  
ref. to  
water  
entry  
zones

**ACTION** - The section on water-level measurement will be revised.

App B, p. 1

**6. SOIL GAS SURVEY** - The following information should be provided or revised in the RISOP. On June 21, 1989, EPA and Weston discussed the comments below. EPA approves of the soil gas survey provided Weston revises the RISOP according to EPA's recommended actions. Weston presented a modified grid pattern to EPA on June 21, 1989. This new pattern is approved by EPA.

A. Section 1.3.5 indicates soil gas analysis will include PCE, TCE, 1,1,1-TCA and 1,2-DCE. Appendix C does not include analysis for 1,2-DCE. This discrepancy must be corrected.

App. C  
C.3.D.1

**ACTION** - If DCE analysis is possible, Weston will analyze for this compound. The RISOP will be made consistent.

B. Decontamination procedures should include evacuation of the system without the sample bottle between sample locations. Briefly discuss the appropriateness of this issue.

App C  
C.3.A

**ACTION** - If possible, Weston will do this. The RISOP will be revised.

C. The frequency of collection of Field Blanks, Laboratory Blanks and Standards should be specified. Is it the same for other media and therefore specified in the QAPP.

App C  
C.3.D 4,5,6

**ACTION** - The appropriate schedule will be referenced or provided.

D. The RISOP should describe the soil gas probe to be used and the method of insertion into the ground. A diagram should be placed in the RISOP.

Subsection  
1.3.7  
Figure 1-2

**ACTION** - Weston will revise the RISOP.

E. Why will duplicate samples usually be run "at different sample volumes". Please specify.

corrected,

**ACTION** - Weston will check the reason and revise or explain this issue on page 1.3-16.

AR300576

F. Please record the depth interval from which the sample was actually collected.

App. C  
C.3.C.4

ACTION - Weston will revise the RISOP.

G. The vacuum level and/or pumping rate must be specified. App. C  
The purge time for the equipment should be calculated. C.2

ACTION - The vacuum rate will vary. Weston will specify the volumes to be purged if not already specified.

H. Item C.3.E.8 implies some kind of analysis or QA procedures forms. Please elaborate. App. C

C.3.E.8

ACTION - Weston will revise the RISOP.

J. How will grid be modified when node falls on building, road or pipeline? Subsection 1.3.7

ACTION - The node will be eliminated. No action required.

7. SITE ACCESS - Audubon Water Company should be included on the list of companies from which access is required. Subsection 1.3.5

ACTION - Weston will include A.W.C.

## 8. GEOPHYSICAL LOGGING -

A. EPA recently conducted geophysical logging in the middle arkose member of the Stockton Formation. temperature and fluid resistivity logs were found to be the best indicators of flow zones. Spontaneous potential and resistivity logs provided little useful information. Weston should seriously consider including fluid resistivity and temperature logs to satisfactorily identify flow zones in the well.

Subsection 1.3.13

The SOP for packer testing suggests that "fractured" zones will be tested with the packers. EPA requests that "flow" zones also be identified with geophysics and tested with the packers.

ACTION - Weston and EPA reviewed the geophysical logs of wells in the middle arkose member. Weston will choose the appropriate logs for the investigation. Temperature logs are strongly recommended.

B. EPA recently conducted brine tracing in **AR300577** wells and deep open boreholes in the middle arkose member of the



Stockton Formation. The results indicated the open boreholes were seriously degrading the aquifer prompting EPA to recommend abandonment. The deep, open borehole monitoring wells on and near the Commodore site should be similarly tested. Geophysical logging and flow logging should be conducted on potential problem wells near the Commodore facility and evaluated to determine if the wells should be abandoned. Abandonment of problem wells should become part of any remedy.

**ACTION** - Weston is reluctant to introduce any dyes or tracers into the wells. EPA and Weston agreed that objectives can be achieved during packer testing. No action.

C. Geophysics should be completed after the holes are reamed. Subsection 1.3.13

**ACTION** - EPA and Weston discussed possibilities. Weston will decide on sequence of activity.

## 9. HYDROGEOLOGIC TESTING (PACKER TESTING) -

A. The following modifications and additions to the SOP for packer tests are strongly recommended by EPA. These modifications will provide for better and more useful information from the well.

1. A transducer should be placed between the packers in order to obtain head data from the pumped zone. The transducer above the packer will show the interconnection, if any, between the pumped zone and zones above the top packer and may not show the head decrease in the pumped zone. Subsection 1.3.15  
Figure 1-36

A transducer between the packers will also provide the best information to enable the field geologist to determine the appropriate discharge rate and hydraulic value for the pumped or tested interval.

**ACTION** - Weston intends to do this. The RISOP will be revised.

2. K.3 (b) OPERATION: The following information should also be recorded in the field log book:

- a. Depth and length of interval being tested, and
  - b. Amount and changes in air pressure in the packers.
- App: K  
K.3. b.

**ACTION** - These are standard procedures for Weston. The RISOP will be revised.

AR300578

3. The packer assembly must be depicted on a diagram within the RISOP.

Figure  
1-36

ACTION - A figure will be placed in the RISOP.

4. K.3 (c) OPERATION: Water levels above the packers should be measured for a period of time after the packers are inflated to measure the response of the aquifer(s) to the inflation of the packers. The "static" water level before and after inflation of the packers may be different. Lower thiefing zones can be identified. This should be added to the procedures.

App K.  
K.2.2d.  
K3.C.6

ACTION - The RISOP will be revised.

5. Install Packers and Inflate Packers must be added to the procedures.

App K

ACTION - Weston will include the inflation of packers to the procedures.

B. How will packer intervals be selected. Include use of caliper log to select appropriate seating intervals.

Subsection  
1.3.15

ACTION Weston will elaborate.

C. Describe how and when samples will be collected and the analysis required for samples.

App  
K E

ACTION - Samples will be collected after at least 3 volumes have been purged. Samples will be collected from a sampling tap on the discharge line. Samples will be analyzed at a local lab (non-CLP).

D. Describe what will be done with the purged water.

App K

ACTION - The water will be directed to the sewer or surface water drainage. Weston will first contact the local authorities.

K. E  
Notes

ADDITIONAL COMMENT ON DEEP, OPEN-HOLE WELLS...

\*\*\*\*\* If brine tracing is not done in deep open-hole wells and limited packer testing is not done in deep open-hole wells, the possibility for downward migration and subsequent flow of contaminants into the deeper aquifer may go undetected. Possible problem wells include MOS -11, 13, and 18 and AUD MW 1 and 2. Weston must a means to detect this flow.

AR 300579  
\*\*\*\*\*

**10. ABANDONMENT OF EXISTING MONITORING WELLS** - Well evaluation and abandonment must become a task in the RI/FS or subtask 1.2 in the work plan must be expanded. The results of the well assessment can be used to direct further field activities. The results of the well assessment should be provided to EPA to document and support decisions made for each well.

Subsecto  
1.2.5

A. Open wells near the source of contamination should be properly evaluated to determine if they are seriously contributing to the degradation of deeper ground water at the site. EPA strongly recommends that deep wells with shallow casing which are considered for further use, be tested with temperature logs and fluid resistivity logs to identify flow zones. Brine trace, or similar internal flow logs, should also be run in these wells to properly evaluate the impact these wells may have on deeper ground water. If the wells are determined to spread contamination, the wells should be properly abandoned in accordance with state and other requirements as part of the remediation. The monitoring wells recommended for testing are outlined below.

B. Several wells at Commodore were apparently destroyed, removed or abandoned since their construction and during the facility expansion. The abandonment procedures, if any, of all wells constructed or "owned" by Commodore or on the Commodore site should be provided in the RISOP (EPA realizes this information may not be readily available), and the source of information provided. The source of information in Table 1-1 in the RISOP must be provided. For example, how does Weston know MOS-10 was plugged? If a well cannot be located, abandonment cannot be assumed.

C. Since some of the wells may be improperly abandoned, they should be located, where possible, evaluated and properly abandoned during the RI/FS. Commodore and Weston must make all reasonable effort to locate and properly abandon these wells. A poorly constructed or improperly abandoned well at Commodore could now be the biggest threat to the aquifer.

MOS 2,4,6,7,8,12 - LOCATE, EVALUATE, ABANDON  
MOS 3 - PROVIDE LOCKING CAP  
MOS 9 - PROVIDE INFORMATION, LOCATE, EVALUATE, ABANDON  
MOS 10 - LOCATE, DOCUMENT P&A OR TEST, EVALUATE, ABANDON  
MOS 5,14 - REPAIR  
MOS 11,17,18 - LOCATE, TEST, EVALUATE, ABANDON

AUD MW-3 - LOCATE, TEST, EVALUATE, ABANDON  
AUD MW-1, AUD MW-2 - TEST, EVALUATE, ABANDON

D. When and how will existing wells be evaluated and repaired? The work plan indicates such repairs will be made during subtask 4.3 (ecological assessment).

AR 300580

**ACTION** - Weston will expand the Well Assessment task. Geophysics will be run at MOS-11, 13, 18, AUD MW-1 and AUD MW-2 if possible. Brine tracing will not be done. The status of each well will be better defined in the table.

**11. ARARS -**

A. Table 1-3

1. proposed MCL for FCE = 0.005 mg/l
2. proposed MCL for trans 1,2-DCE = 0.1 mg/l
3. proposed MCL for cis-1,2-DCE = 0.07 mg/l

Subsection  
1.1.1 to  
Table 1-4

**ACTION** - No action.

B. The following ARARS may apply due to emissions from stripping, consolidation and excavation activity (table 1-7):

1. 40 CFR Part 50 - National Ambient Air Quality Standards
2. 40 CFR Part 52.24 - EPA's new source review requirements
3. Chapter 127 of PA's Air Resource Regulations which deals with new source review

Subsection  
1.1.1 to  
Table  
1-7,  
Air Stripp.  
Consolidation  
Excavation

**ACTION** - Revise table

**12. GROUND WATER MONITORING PROGRAM -**

A. EPA believes the location and construction of monitoring wells might be better suited to successfully monitor the Commodore site if the existing wells are first logged and tested. For example, geophysical logging, packer testing and chemical screening of flow zones within some of the existing wells accompanied by Weston's existing subsurface reconstruction will better enable Weston to choose monitoring locations and well completion and construction depths to monitor the affected zones.

Subsection  
1.3.12  
1.1.12

EPA could agree to Weston's proposed locations for the initial investigation of the Commodore site provided sufficient justification is provided.

**ACTION** - No action

B. The casing should be set at least 5 feet into competent rock. The RISOP must provide criteria defining competent rock (e.g. # of blow counts and core information) which will be used to determine the length of casing to be placed in shallow bedrock wells. Section 1.3.10 and Appendix H should be made consistent and revised to require at least 5 feet of casing to be grouted into competent bedrock.

Subsecto  
1.3.12

AR 300581

**ACTION** - Make consistent at 5 feet.

C. Monitoring well MOS-17 appears on figures 1-28 and 1-29 in the RISOP, but apparently is an unlocated well not available for sampling. This well should be removed from these figures.

corrected

**ACTION** - Revise

D. Figure 1-26 depicts 11 possible locations, section 1.3.7 suggests approximately <sup>up to</sup> 12 monitoring wells will be installed, and section 1.3.10 indicates up to 14 wells will be installed. Please be consistent throughout the RISOP.

Figures and text consistent  
9 new well with possibility of 3 more

**ACTION** - Revise to indicate 9 wells will be installed. A fourth cluster may be installed after initial results are evaluated. EPA does not require the shallow overburden wells be installed.

E. Why is figure 1-26 ("POSSIBLE LOCATIONS FOR MONITORING WELLS...") located in section 1.3.7 ("COLLECT SOIL SAMPLES") and not in section 1.3.10 ("MONITORING WELL INSTALLATION")?

corrected  
Figure added to Subsection 1.3.12

**ACTION** - Revise. Place in appropriate section.

F. How will Weston identify and differentiate possible off-site sources of contamination.

Subsection 1.3.12  
1.3.12  
1.3.16

**ACTION** - Weston will elaborate.

G. Are the monitoring wells located on the lineaments identified by Weston. The wells should be located on lineaments.

Subsection 1.3.12

**ACTION** - Lineaments probably represent different lithologies. No action required since wells are placed in satisfactory positions.

H. Section 1.1.10.2 indicates that hydraulically upgradient and downgradient areas have been identified. Information indicating the direction of ground water flow (besides presumed flow to the Schuylkill) directions should be presented in this section. Otherwise, constituents are found northeast, northwest and southwest of the site.

corrected

**ACTION** - Weston will use compass directions.

I. If the monitoring network proposed for installation differs from the one proposed in the RISOP based upon information obtained from early RI/FS tasks, a diagram depicting the proposed modifications must be sent to EPA with justification prior to installation.

Subsection 1.3.12

APR 30 1982

**ACTION** - Weston intends to keep EPA informed. EPA will be notified.

J. Casings and screens should be decontaminated before installation into the well. App H

H 2.2.d

**ACTION** - this is standard procedure. the RISOP will be revised.

K. PVC or steel casings are approved by EPA, but the RISOP must indicate that construction materials will be consistent.

Subsection  
1.3.12

**ACTION** - Will use PVC. May use steel in all deep wells if the strength becomes an issue.

L. The deep wells will be cored, logged and packer tested. the RISOP must specify that information will be used to ensure that two possible flow zones will not occur in the same screened or open interval.

Subsection  
1.3.12

**ACTION** - This was intention of Weston. RISOP will state this.

M. Audubon wells # 6 and 9 should be considered for sampling. TCE has recently been detected in these wells.

Table 1-1  
Subsection

N. A well serving a small population to the northwest of the site and separate from the Audubon system should be considered for sampling.

1.3.5  
Subsection:  
1.1.18  
1.3.16  
Table 1-1

O. Will modified pumping schemes affect the adequacy of the monitoring network. VFCC-4 may be removed from service. VFCC-3 may be reactivated.

**ACTION** - No action. Weston and Commodore are informed.

### 13. CONTAMINANT SOURCES

A. The interpretation in the second bullet item in section 1.1.4.1 can not be concluded from aerial photography. The statement concerning TCE should be referenced and reported in section 1.1.5. and not here.

Subsection  
1.1.4

**ACTION** - Revise.

B. Section 1.1.5 should suggest that the possible contaminant sources have been identified because they may have handled or otherwise stored compounds similar to those found in area ground water, but they should not be identified as possible contributors to ground water contamination. At minimum all company names must be removed from this section as requested previously by EPA. The list, and specific references to it,

Subsection  
1.1.4

AP 300583

should be removed from the RISOP since they do not impact the scope which attempts only to separate potential on- and off-site contamination and not to identify other sources.

**ACTION - Revise.**

C. The objectives section of the RISOP does not address the separation of on-site and off-site sources or contamination. Section 1.1-10 is not consistent with 1.3-1.

**ACTION - No action.** Weston will evaluate chemical signatures.

#### **14. HISTORICAL DATA -**

A. Overburden and bedrock ground water, surface water, soil and air analytical data should be presented in table form in the historical section of the RISOP. Results of quarterly sampling will enable the reader to visualize the rationale for the proposed ground water sampling program. A table summary, similar to Appendix C of the November Quarterly Monitoring Report, will also help locate and make sense of trends and data anomalies. Other data summaries, such as results of sampling during the NUS investigation, will provide documentation of rationale for surface water sampling program. EPA requests that the RISOP contain summary tables of analytical results from air, soil, ground water and surface water. The data can be qualified if necessary.

**ACTION -** Weston has prepared summary tables for ground water. No further action.

Subsection  
1.1.18

B. Why is AUD MW-3 mentioned on page 1.1-30

corrected

**ACTION - Revise.**

**15. SURFACE WATER SAMPLING -** EPA no longer requests surface water sampling in the early stages of the RI/FS. After soil sampling and ground water sampling is completed and ground water/surface water relationships are determined, EPA may request surface water sampling.

The RISOP now includes surface water sample collection and analysis for VOCs. EPA did not request this type of investigation. One or two surface water samples could be collected from the drainage to Lamb Run near the point where ground water discharges to the surface water. Previous sampling determined the presence of TCE in the drainage. VOC (or TCE) analysis of select surface water samples should help Weston develop and confirm their site model.

**ACTION - No action.**

AR300584

16. RESIDENTIAL WELL SAMPLING -

A. Section 1.3.14 and the SOP for collecting water samples are not clear in identifying those homes which will be sampled as part of the current investigation.

Subsection  
1.3.16

B. Several residential wells have not been sampled since 1984. Elevated levels of VOCs were detected in some of these wells (e.g. 2665 Egypt Rd.). The current investigation should provide for sampling of residential wells which have not recently been sampled (see comment 19).

ACTION - Weston will clarify A and B.

C. According to the list on page 1.3-36 "RESIDENTIAL WELLS" both George Gear and Anthony Branch live at 2619 Audubon Rd.

ACTION - Weston has revised this page.

corrected

17. RESIDENTIAL FILTERS - The RISOP should address the need to assess the effectiveness of the filters installed in the homes affected by the site. How will the filters be disposed.

Subsection  
1.3.16

18. REPORTING OF RESULTS TO RESIDENTS - Commodore should report the results of each sample collected from a residential well to the homeowner. The following minimum procedure is recommended:

- A. Contact homeowner to set up sampling date and time,
- B. Discuss sampling procedures and reporting of results, and
- C. Mail form letter to individual homeowners with table comparing results to applicable standards.

19. RESIDENTIAL MONITORING PROGRAM STRATEGY - During the RI/FS the first round of sampling from residential wells should include those wells designated for sampling in the Quarterly monitoring. Subsequent sampling rounds should include these wells (unless modified by FADER) and any well determined to be located in an area which may be affected by contamination from the site.

Subsection  
1.3.16

ACTION 17,18,19 - The filters and reporting will be addressed as part of the quarterly monitoring program. For the RI/FS EPA requests the results from all residential wells sampled be sent to homeowners. After initial RI data is evaluated, EPA may request additional homes be sampled which are not part of the quarterly monitoring.

20. GROUND WATER MODELLING -

A. The "half life" of individual compounds should be presented in table form. The source of this information should

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Figure 11



be noted. The values of dispersivity used should be noted.

Subsection  
1.1.12

**ACTION - Add to RISOP.**

B. The use of the model results to assist the planning of monitor well locations and other field activities is stated (1.1-2a), but not described. How will the model be used. Was the model used to preliminarily locate wells.

Subsection  
1.1.12

**ACTION - Weston will elaborate.**

C. Many of the assumptions used to develop the TCE transport model are not appropriate for ground water flow in the Stockton Formation.

**ACTION - No action.**

D. Should t=0 occur after new wells are installed. Can analyses from open borehole wells be used to properly calibrate the model.

**ACTION - No action.**

**21. AIR EMISSIONS -**

A. The air model to be used should be specified. EPA's air management division recommends the use of the ISC-LT model.

Subsection  
1.3.19

B. Air monitoring should be conducted in conjunction with air modelling. The H&SP should cover this.

C. Permits should be obtained for existing treatment.

Subsection  
1.3.19

D. Where does Attachment 1 in section 1.3.17 really belong? removed

**ACTION - Respond as appropriate.**

**22. LABORATORY, ANALYSIS AND VALIDATION -**

A. A table should be prepared which summarizes the media sampled, type of bottles, preservatives, analysis, etc. This table should be placed in section 1.3.21 and should include bottles and other information for TAL analysis. Media should include soil and water.

Table  
1.15

B. A table summarizing the type of information presented on page 4-18 of the QAPP would be helpful.

C. EPA recommends a simple table format to discuss DQOs.

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ACTION - Weston has or will prepare tables.

D. Method 601 and 8010 are not standard CLP methods. These methods are, however, appropriate to this investigation. The RISOP should not indicate these methods are CLP. EPA requested some ground water samples be analyzed for TCL/TAL compounds. These samples must be analyzed using standard CLP methods (at least for semivolatiles and metals).

Subsections  
1.3.2,  
1.3.11  
1.3.12

ACTION - Revise RISOP. Add TCL/TAL analysis using CLP.

**23. SOIL/VAPOR PROBES -**

A. 25% (4) of soil samples will be analyzed for TAL. The RISOP incorrectly indicates 20%.

Subsection  
1.3.9

ACTION - Weston corrected this.

B. At least one of the TAL samples should be collected near the tank area. At least two of the samples should be collected along Adams Avenue and one of these near the drainage ditch near the French Drain air stripper.

ACTION - Weston to consider this.

C. If water is added to the boring, EPA recommends a sample of the water be analyzed. Include in D.3.1.

APP D  
D.3.1.

ACTION - Revise.

D. A diagram depicting the construction details of the vapor probes should be placed in the RISOP. The proposed screen length, slot size, and depth must be stated in the RISOP.

Figure  
1-31

ACTION - Revise.

E. The boring and well locations will be located with respect to the property boundary. Please correct page E-3.

APP E  
E.3.a.11

ACTION - Revise.

F. The soil can not be analyzed by direct injection. Please clarify in section 1.3.9.

Subsection  
1.3.11

ACTION - Correct.

**24. DEVELOPMENT AND PURGE OF WELLS -** The RISOP should state that the well will be developed until the pH, temperature and conductivity stabilize and the discharge is clear. Development methods and procedures must be documented.

APP H  
H.3.

28. ISV FFS - The approved RI/FS work plan provided Commodore and EPA the opportunity to conduct a FFS to determine the applicability of ISV as a remedial treatment technology. This type of activity is not required by EPA during the RI/FS, but is very applicable to the situation at Commodore. Since it was proposed by Weston, and is sensible for the Commodore site, EPA and Commodore should agree to implement the FFS during the early stages of the RI/FS process, providing initial site investigation indicates such a test is warranted. The RISOP does not adequately discuss the ISV test plan as mentioned in work plan and should provide some decision criteria upon which the FFS will be implemented. Information contained within the Data Management Plan should be placed within the RISOP.

Subsection  
1.1.17

**ACTION** - Weston will elaborate.

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COMMODORE SITE  
QAPP

EPA COMMENTS

EPA's Central Regional Laboratory has provided comments on the RISOP and related documents. These comments have been given to Weston and are again attached to this comment package. The following comments also pertain to the QAPP as do some of the comments on the RISOP. Please modify the QAPP according to the comments below.

1. (4-15) - The CLP level or equivalent must be specified. Weston level II is equivalent to full CLP data format. Please clarify.
2. Precision - The formula to determine relative % difference should be specified.
3. Completeness - The procedures to determine completeness should be specified. How is Weston sure that 90% completeness will be achieved.
4. (4-3) - It is unclear when equipment will be wrapped again.
5. (4-3) - Why isn't distilled water used instead of tapwater. Local tapwater may be a poor source of decon water.
6. The sample identification tags (Attachment 1) have space for sample time, preservative and analysis to be performed, yet these items are not discussed in section 4.3.2. The sample I.D. should also specify the media. The sampler should initial the tags.
7. Section 4.3.4 should indicate that the chain of custody begins in the laboratory.
8. Section 4.3.4 should specify that pertinent forms include shipping receipts.
9. Lab pH and sample bottle integrity should also be checked and entered into the laboratory tracking system.
10. Elaborate and expand the discussion of data validation, data reduction and data reporting according to QAMS - 005/80.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III  
CENTRAL REGIONAL LABORATORY  
839 BESTGATE ROAD  
ANNAPOLIS, MARYLAND 21401  
(301) 266-9180

DATE : May 26, 1989

SUBJECT: CSG RISOP

FROM : Diann Sims (3ES23) *DS*  
Environmental Scientist

TO : Suzanne T. Billings (3HW12)  
Regional Project Officer

THRU : Patricia J. Krantz *PJK*  
Chief, Q.A. Section

Per your request, the CSG RISOP has been reviewed. The document was reviewed with regard to compliance to QAMS 005/80, the RI/FS Guidance, and overall technical adequacy.

The document contains numerous deficiencies. These are summarized below. For details, see the enclosed checklist.

- A major concern is the lack of a historical data section in the RISOP. Consequently, the document provides no viable rationale for the sampling and analysis plan.
- The RISOP does not address a number of the elements necessary for a complete QAPjP. Of the elements addressed, only two (2) do not contain deficiencies.
- There are discrepancies throughout the plan regarding sample analysis.
- The document has not been prepared in a manner that allows the reviewer to locate necessary information (no cross references).

Because the noted deficiencies can greatly alter the technical adequacy of the project efforts, resubmission of the plan is recommended. Weston may find it helpful to meet with me or another member of the Quality Assurance staff before the RISOP is resubmitted. If I can be of further assistance, please do not hesitate to call me.

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Identification

	Y	N	NA
I) Title page			
1 - Does page include title of project?	..X..	.....	.....
2 - Name(s) of principal investigators shown?	..X..	.....	.....
3 - Appropriate approval lines at bottom?	✓.....	.(1).	.....
4 - Plan prepared in document control format?	.....	.(2).	.....
II) Table of Contents			
1 - Does Table include a list of all Plan required elements and appropriate pg. no.?	✓.....	..X..	.....
2 - Include distribution list?	✓.....	.(3).	.....
3 - Include list of Appendices?	..X..	.....	.....

Comments

- (1) This document has no approval lines. Include appropriate approval lines, including a line for the EPA RPM.
- (2) Plan must be prepared in document control format.
- (3) Include a distribution list.

Why only 1 chapter?  
Document Control Format?



III) Project Description

	Y	N	NA
Are the following addressed, consistently presented, technically correct?			
1 - Statement of objectives (purpose)?	(1.3.1)	.(1).	.....
2 - Dates for start and completion of project and sampling activities?	(1.3.3)	.(2).	.....
3 - Overview of project's scope (activities)?	..X..	.....	.....
4 - Background information?	..X..	.....	.....
5 - Brief statement of intended data usage(s)?	..X..	.....	.....
*6 - Description of sampling network design and rationale?	(1.3.1.2)	.(3).	.....
6a - Design of overall monitoring systems?	..X..	.....	.....
6b - Specific location of sampling sites?	..X..	.....	.....
6c - Justification of overall design?	(1.3.1.2)	.(3).	.....
7 - Sample matrices?	..X..	.....	.....
*8 - Parameters to be measured?	(1.3.2)	.(4).	.....
*9 - Frequency of collection?	(1.3.2), (1.3.3), (5)	.....	.....
*10 - Field and lab measurements?	..X..	.....	.....
*11 - Procedures for filtered/unfiltered groundwater, or other similar fractions/sub-groups specified and included in parameter definition?	(1.3.1.6)	(4)	.....
*12 - Type of sample(s) (grab, composite, etc.)? (Collection procedure in Section VI)	..X..	.....	.....

\*Depending on the Program and/or project, information related to sampling may be discussed under Project Description (Section III), Sampling Procedures (Section VI) in the QAPjP or in a separate Sampling Plan (e.g., CERCLA Remedial) - the questions apply regardless of format.

Comments

- (1) The objective of the RI/FS is inadequately stated.
- (2) Include schedule.
- (3) There is no rationale for the sampling design provided.
- (4) In various sections, the RISOP mentions analysis of TAL components (1.3.7) and provides filtration guidelines. Surface water collection activities are also noted. These items do not correspond to sampling and analytical plans. Correct this discrepancy.
- (5) Please note the number of sampling rounds.

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IV. Project Organization

	Y	N	NA
1 - Does the Plan identify key people responsible for:			
- Overall QA/QC?	..X..	.....	.....
- Sampling operations and sampling QC?	..X..	.....	.....
- Laboratory analyses and laboratory QC?	..X..	.....	.....
- Data processing and data processing QC?	.....	.(1).	..... (4.6.2.)
- Data review?	.....	.(1).	..... (4.6.2.)
- Performance and System audits? (Lab and field)	..X..	.....	.....
2 - If CLP is to be used in State-lead remedial or SI, does QAPjP define responsible person(s) for:			
- Final data review of routine CLP services?	.....	.....	..X..
- Preparation and final review of SAS requests?	.....	.....	..X..
- Review and confirmation of any tentatively identified organic compounds?	.....	.....	..X..
3 - Are phone numbers and addresses included?	..X..	.....	.....
4 - Is line authority for all referenced organizations explained or demonstrated by including an organizational chart(s)?	..X..	.....	.....
5 - Are personnel qualifications included? Training? Experience? Resumes?	(1:4)	..X..	..... ✓
6 - Is the organizational structure appropriate to accomplish the QA objectives of the project?	..X..	.....	.....

Comments

(1) Provide this information.

AR300594

V) QA Objectives and Criteria

	Y	N	NA
1 - Is there a statement of intended data usage?	.....	.(1).	.....
2 - Are the terms and definitions for precision, accuracy, representativeness, comparability and completeness properly used and expressed (i.e., QA/QC concepts and theories are understood and properly implemented relative to the Project)?	P. 4-1 .....(2)	.....	..... ✓
3 - Are Data Quality Objectives (DQOs) quantitatively stated for precision and accuracy (bias)?	..X..	.....	.....
3a - Have the following been defined for each matrix and parameter:			
1) Level of QA effort (frequency of QC, etc)?	.....(3)	.....	..... ✓
2) Accuracy (matrix spikes, surrogate spikes, reference samples, etc.)?	4.6.1.3 4.6.1.1(3)	.....	..... ✓
3) Precision (replicate samples)?	4.6.1.3, 4.6.1.1(3)	.....	..... ✓
4) Sensitivity or MDL?	..X..	.....	.....
5) Statistical reporting units?	..X..	.....	.....
3b - Are quantitative limits established for each?	..X..	.....	.....
3c - Are field and lab both covered?	1.3.2 .....	.(4).	.....
3d - Is it clear that a distinction has been defined for "total" system variability and bias vs only looking at the laboratory?	..X..	.....	.....
3e - Are objectives/requirements properly expressed (e.g., not confused w/capabilities)?	..X..	.....	.....
4 - If appropriate, are completeness objectives quantitatively stated?	4.1... (2)	.....	..... ✓
5 - Are representativeness and comparability appropriately addressed?	4.1... (2)	.....	.....
6 - Are the interrelationships (and differences) between study design (number of samples needed), analytical procedures, internal QC and data assessment reflected in the DQOs?	1.3.2 Table 1-11 .....	..X..	.....

Comments

- (1) Provide a statement(s) of intended data usage.
- (2) Comparability is not addressed.  
 - Discuss the rationale for the 90% completeness objective. ✓
- (3) This information is not provided. Please note that references to CLP protocol with regard to EPA method 601 are inappropriate.
- (4) Field components are not addressed.

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VI) Sampling Procedures  
(See also Section III)

	Y	N	NA
1 - Are procedures documented and detailed for all parameters?	..X..	.....	.....
2 - Are the following elements included:			
- Investigation objectives?	..X..	.....	.....
- Site background?	..X..	.....	.....
- Analysis of existing data?	.....	.(1).	.....
- Analytes of Interest?	..X..	.....	.....
- Sample types?	..X..	.....	.....
- Map of locations to be sampled?	..X..	.....	.....
- Sample locations and frequency?	Table 1-11	.(2).	.....
- Technique or guideline used to select sites?	..X..	.....	.....
- Specific sample collection methods?	..X..	.....	.....
- Description of sampling devices?	..X..	.....	.....
- Containers (type and source)?	..X..	.....	.....
- Preservatives (type and source)?	Table 1-15	.(3).	.....
- Holding times?	4.5.2	.(3).	.....
- Reagents?	.....	..X..	.....
- Transport and storage?	..X..	.....	.....
- Preparation of sampling equipment (before and during sampling) and containers?	..X..	.....	.....
- Blanks?	..X..	.....	.....
- Record-keeping requirements?	..X..	.....	.....
- Coordination with laboratory?	.....	.(4).	.....
3 - For RI/FS especially, does the (Sampling) Plan:			
- Provide specific guidance for all field work?	..X..	.....	.....
- Provide a mechanism for planning and approving site activities?	.....	..X..	.....
- Ensure that sampling activities are limited to those that are necessary and sufficient?	1.3.2	.(1).	.....
- Provide a common point of reference for all parties to ensure comparability and compatibility between all activities performed at the site?	4.6.2,3	..X..	.....

Comments

(1) The RISOP does not provide analysis of existing data. Thus, there is no rationale for collecting only VOC samples. Similarly, the Plan provides insufficient rationale for the sampling activities.

(2) What is the sampling frequency?

(3) That Plan notes a 14 day holding time for VOC samples. This holding time is applicable to preserved samples. Preservation techniques (if used) must be detailed in the Plan.

(4) Co-ordination with the laboratory must be addressed.

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VII) Sample Custody

	Y	N	NA
1 - Does the plan address:			
- Field custody procedures?	..X..	.....	.....
- Transfer of custody and shipment?	..X..	.....	.....
- Receipt of samples?	..X..	.....	.....
- Lab custody procedures?	..X..	.....	.....
2 - Does Plan include examples of forms, tags, labels, records, etc.?	..X..	.....	.....
3 - Does the Plan address evidentiary considerations?	4.6.2, 5 4.6.2.1 .....	.(1).	.....
4 - Do field documentation procedures:			
- Document source of reagents or supplies?	..X..	.....	.....
- Include procedures/forms for recording the exact location and specific considerations associated with sample acquisition?	..X..	.....	.....
- Document specific preservative method?	..X..	.....	.....
- Include labels containing all necessary information?	..X..	.....	.....
- Include form to track custody?	..X..	.....	.....
5 - Do lab custody procedures:			
- Identify Sample custodian?	..X..	.....	.....
- Provide for custody record within the lab?	..X..	.....	.....
- Specify procedures for sample handling, storage, dispersment for analysis and disposal?	..X..	.....	.....

Comments

(i) Address this issue.

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Section:  
Revision No.: 3  
Date: 1/13/87  
Page: 8 of 16

VIII) Calibration Procedures and Frequency  
(Lab and Field)

	Y	N	NA
1 - Does Plan include methods/procedures to assure field and lab equipment are functioning optimally?	..X..	.....	.....
2 - Is frequency of above included?	..X..	.....	.....
3 - Are equipment log books required to record usage, maintenance, calibration and repair?	..X..	.....	.....
4 - Does Plan include calibration standards to be used, their source and traceability procedures?	4.4 4.3.9	.(1).	.....
5 - Does Plan include calibration documentation requirements:	4.4.1.(1)	.....	.....
- Date(s) of calibration?	..X..	.....	.....
- Identification of standards used?	..X..	.....	.....
- Personnel performing calibration?	.....(1)	.....	.....
- Results of calibration (raw data and summary statistics)?	..X..	.....	.....
- Corrective actions taken?	.....(1)	.....	.....

Comments

(1) This information is not noted in the QAPjP. Address these items.

AR300598

Section:  
Revision No.: 1  
Date: 3/27/86  
Page: 9 of 16

IX) Analytical Procedures

	Y	N	NA
1 - Are analytical procedures written as SOPs and included in full or by reference?	..X..	.....	.....
1a - Are all procedural steps and options described?	..X..	.....	.....
2 - Are the criteria of method selection included (e.g., in order to obtain a particular DQO)?	..X..	.....	.....
3 - If method choice is governed by regulatory requirement (e.g., NPDES, SDWA, RCRA), have the appropriate methods been chosen?	.....	.....	..X..
4 - For CERCLA can CLP equivalency be determined?	..X..	.....	.....
5 - Is it evident from the Plan that the laboratory has the appropriate facilities, services, equipment and supplies to perform the required analysis(es)?	..X..	.....	.....
6 - Do the methods include specific QC requirements (type, frequency, acceptance, etc.)?	.....	.....	.....

i.3.2  
Table 1-1  
.....(1)  
4.6.1.1  
4.6.1.3

Comments

(1) See note 3 in Element V.

AR300599



Section:  
Revision No.: 2  
Date: 10/30/86  
Page: 11 of 16

XI) Internal QC Checks

	Y	N	NA
1 - Does Plan describe procedures for both field and lab?	..X..	.....	.....
2 - Are the protocols used (spikes, surrogates, blanks, etc.) described for each parameter and matrix?	..X..	.....	.....
3 - Are acceptance or control limits specified for each?	4.6.1.3 ...X..	.(1).	4.6.1.2 .....
4 - Is the frequency of the checks described?	..X..	.....	.....
5 - Is it clear whether the intent is to measure total error/variability or component (sampling/lab) error/variability?	..X..	.....	.....
6 - Are the procedures described for internal QC checks consistent with the procedures used to assess precision and accuracy (Section XIV)?	4.6.1.3 ...X..	..X..	4.6.1.3 .....

Comments

(1) See comment 3 in element V.

AR300601