UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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A STEP-BY-STEP APPROACH TO DEVELOPMENT OF NPDES AND RCRA PERMITS

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I. INTRODUCTION

This manual is designed to assist the permit writer in the step-by-step development of NPDES or RCRA permit conditions and the associated rationale or permit basis. It is intended to be supplemental to the various policy and procedure manuals, guidance manuals, technical references, regulations and other technical documents available to the permit writer. By frequent reference to these documents and by actual examples of their application, the manual enhances the utility of the available guidance. Development of permit conditions using best engineering judgment (BEJ) or best professional judgement (BPJ) procedures are covered in detail; this guidance is not available in other manuals.

The manual will be particularly useful to the new or inexperienced permit writer. However, it will also be an aid to experienced NPDES permit writers in ensuring that all permit aspects required by the recently revised permit regulations are adequately addressed. The procedures are adaptable to state permit development so both state and EPA pemit writers will find them useful.

The manual is divided into two main sections covering NPDES and RCRA procedures, respectively. Each section describes permit procedures in narrative form and graphically by use of flow charts. Two sample NPDES permits and their associated rationales are presented which give practical examples of the application of NPDES BPJ procedures to actual cases. The sample permits also contain examples of limits on toxic (priority pollutants) and hazardous substances and best management practices. One permit is in an EPA format and the other in a state format. A sample RCRA permit with conditions applicable to container storage facilities and to tanks, surface impoundments and waste piles used for storage or treatment of hazardous wastes, is also included. Appendices to the manual contain useful listings of Consolidated Permit, NPDES and RCRA regulations.

This manual is the result of several technical assistance projects undertaken by NEIC over the past 18 months. In early 1980, NEIC was requested by EPA Region VII to provide technical assistance to the States of Iowa, Kansas, Missouri and Nebraska in the development of "second round" NPDES permits that would require the use of BPJ procedures to establish permit limits. The Consolidated Permit Regulations promulgated on May 19, 1980, contained new permit requirements which necessitated the development of new procedures for preparation of draft permits. No guidance was available on BPJ procedures. To provide general guidance to permit writers engaged in this project, the procedures discussed in Section II of this manual were prepared.

As a result of the new Consolidated Permit Regulations, it was also necessary to prepare new standard conditions applicable to all NPDES permits. A set of these conditions are contained in the first sample permit in Section III. Both sample permits were prepared as part of the Region VII technical assistance project.

NEIC has also provided technical assistance to EPA Regions VI and IX and to the State of Texas in the training of NPDES permit writers. Materials incorporated in the manual were used in these training sessions. NEIC is participating in the Organic Chemicals Industry Team which is drafting permits for a number of chemical plants using these BPJ procedures.

In support of the new RCRA permit program, the Office of Solid Waste (OSW) and the Office of Water Enforcement and Permits (OWEP) are developing a series of policy, procedural and technical guidance documents. NEIC is assisting in the review and revision of draft guidance documents. A series of week long training courses for RCRA permit writers in all 10 Regions and Headquarters was presented during April to June, 1981, by OSW and OWE staff. NEIC participated in the development and presentation of course materials. The RCRA permit procedures in Section V and the Sample Permit in Section VI were a product of this activity.

The contents of this manual are based in part on federal regulations that are subject to revision or revocation, especially the RCRA regulations that are proposed or in interim final status. All such changes through May 1981 are believed to be reflected in the material presented herein. However, the reader is cautioned to verify the status of any specific regulation before relying on it as being in final form.

The reader may wish to make personal contact with technical personnel to obtain clarification of specific manual materials, to obtain additional information or to verify the status of regulations or guidance documents. Questions on the general manual contents or on permit procedures should be directed to Mr. James Vincent at the NEIC (303/234-4656, FTS 234-4656). Questions on the two sample NPDES permits may be directed to Ms. Carie Goodman at NEIC (303/234-2336, FTS 234-2336). Information on NPDES permits policy, regulations and best management practices may be obtained from Mr. Harry Thron in the Permits Division, OWEP (202/426-7010, FTS 426-7010). Effluent guidelines status information and technical assistance may be obtained from Mr. Sid Jackson in the Effluent Guidelines Division (202/426-2586, FTS 426-2586). Questions on the RCRA sample permit may be directed to Mr. Vincent or alternately to Ms. Kay Holub, Permits Division, OWEP (202/755-0750, FTS 755-0750). Ms. Holub will also provide information on the status of RCRA regulations and guidance documents.

Much of the material in the RCRA sections of this manual are in draft form and are based on regulations which are expected to be revised in coming months. It is expected that the manual will be revised as appropriate as revisions occur. Any comments that you might have to improve the usefulness or accuracy of the manual when it is revised are most welcome and should be addressed to:

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PART I

NPDES PERMIT PROCEDURES

II. NPDES PERMIT PROCEDURES

There are a number of general procedural steps that must be followed in the development of an NPDES permit. These are listed in brief form in Table 1. Depending on such factors as industry type, complexity of the facility, availability of effluent guidelines and water quality considerations, various steps may be omitted for specific permits. For instance, if effluent guidelines are available, determination of effluent limits is simplified. For small facilities in compliance with their expiring permits, a plant inspection may not be necessary. On the other hand, all permits will require review of the application, determination of effluent limits and preparation of a Fact Sheet. These procedures are listed to assist the permit writer in ensuring that all aspects of the permit development process are considered in the drafting of a specific permit.

It should be noted that these procedures deal only with the technical aspects of permit preparation beginning with the technical review of the permit application for completeness and ending with the preparation of the draft permit and Fact Sheet. For the administrative procedures concerned with public notice, hearings, appeals and final permit issuance, the permit writer is referred to NPDES permit regulations (40 CFR Parts 122-125, Appendix A), and to the Permits Division Policy Book, March 1981.

The permit development steps are discussed in more detail below. The relationships between the basic permit steps listed in Table 1 are shown graphically in Figure 1, a flow chart of the basic permit development process. Additional flow chart figures are used to provide more detail on each step. These figures are indexed in Figure 1 and referenced in the text that follows.

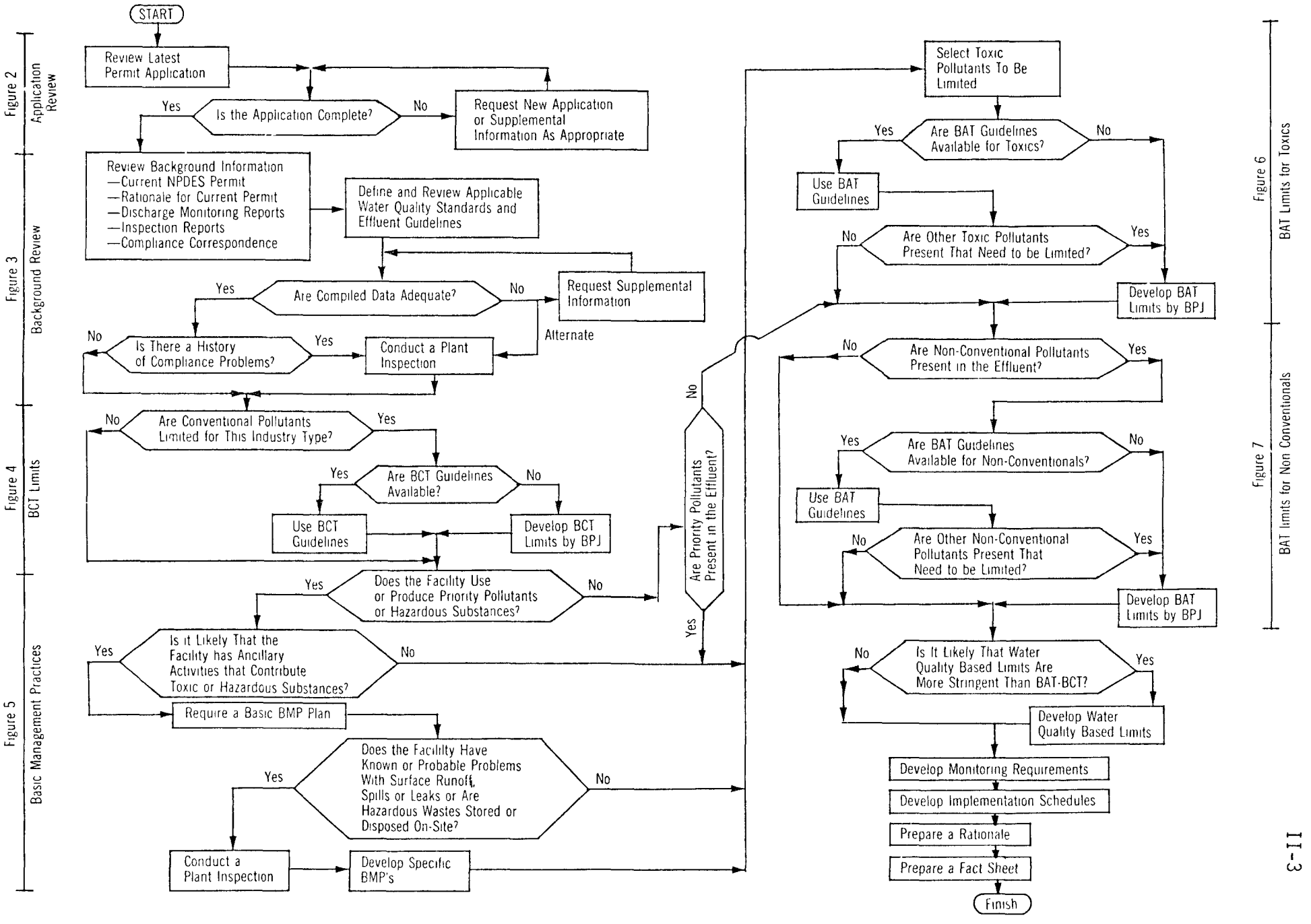
Table 1

OUTLINE OF NPDES PERMIT DEVELOPMENT STEPS

1. Permit Application Review
   - Review application for completeness
   - Request supplemental information as needed
   - Request priority pollutant data if missing
2. Background Information Review
   - Compile file information
   - Compile reference information
   - Review available information for completeness
   - Request supplemental information if necessary
3. Facility Inspection
   - When facility is complex
   - When available information is inadequate to prepare a permit
   - When there is a history of compliance problems
   - When extensive best management practices conditions may be needed
4. Develop BCT Limits for Conventional Pollutants
   - Determine if effluent guidelines are applicable
   - Evaluate existing treatment system
   - Select treatment improvements that meet the BCT cost test
   - Set BCT effluent limits
5. Define Best Management Practices (BMPs)
   - Determine if toxic or hazardous substances handled
   - Define potential for discharge of toxic or hazardous substances from ancillary activities
   - Require a basic BMP plan if appropriate
   - Conduct a plant inspection if there are significant surface runoff problems, a history of spills and leaks or onsite storage, treatment or disposal of hazardous wastes
   - Define specific BMP's as appropriate
6. Develop BAT Limits for Toxic Substances
   - Determine if toxic substances are used or produced or are present in the effluent
   - Select toxic pollutants to be limited
   - Determine if effluent guidelines are applicable
   - Evaluate present treatment system and BCT treatment system selected
   - Select treatment improvements if needed
   - Evaluate the economic achievability of the improvements
   - Set BAT effluent limits for toxic substances
7. Develop BAT Limits for Non-Conventional Pollutants
   - Determine what non-conventional pollutants will be limited
   - Determine if effluent guidelines are available
   - Evaluate the present treatment system and the BCT and BAT improvements selected in Steps 4 and 6
   - Select treatment improvements if needed
   - Evaluate the economic achievability of the improvements
   - Set BAT limits for non-conventional pollutants
8. Evaluate Water Quality Considerations
   - Determine applicable water quality criteria
   - Determine receiving water conditions
   - Determine if water quality based limits are more stringent for any parameters
   - Set any appropriate water-quality-based limits
9. Develop Monitoring Requirements
10. Develop Compliance Schedules
11. Prepare a Rationale and Fact Sheet

FIG.

FLOW CHART OF BASIC NPDES PERMIT DEVELOPMENT PROCESS



PERMIT APPLICATION REVIEW [Figure 2]

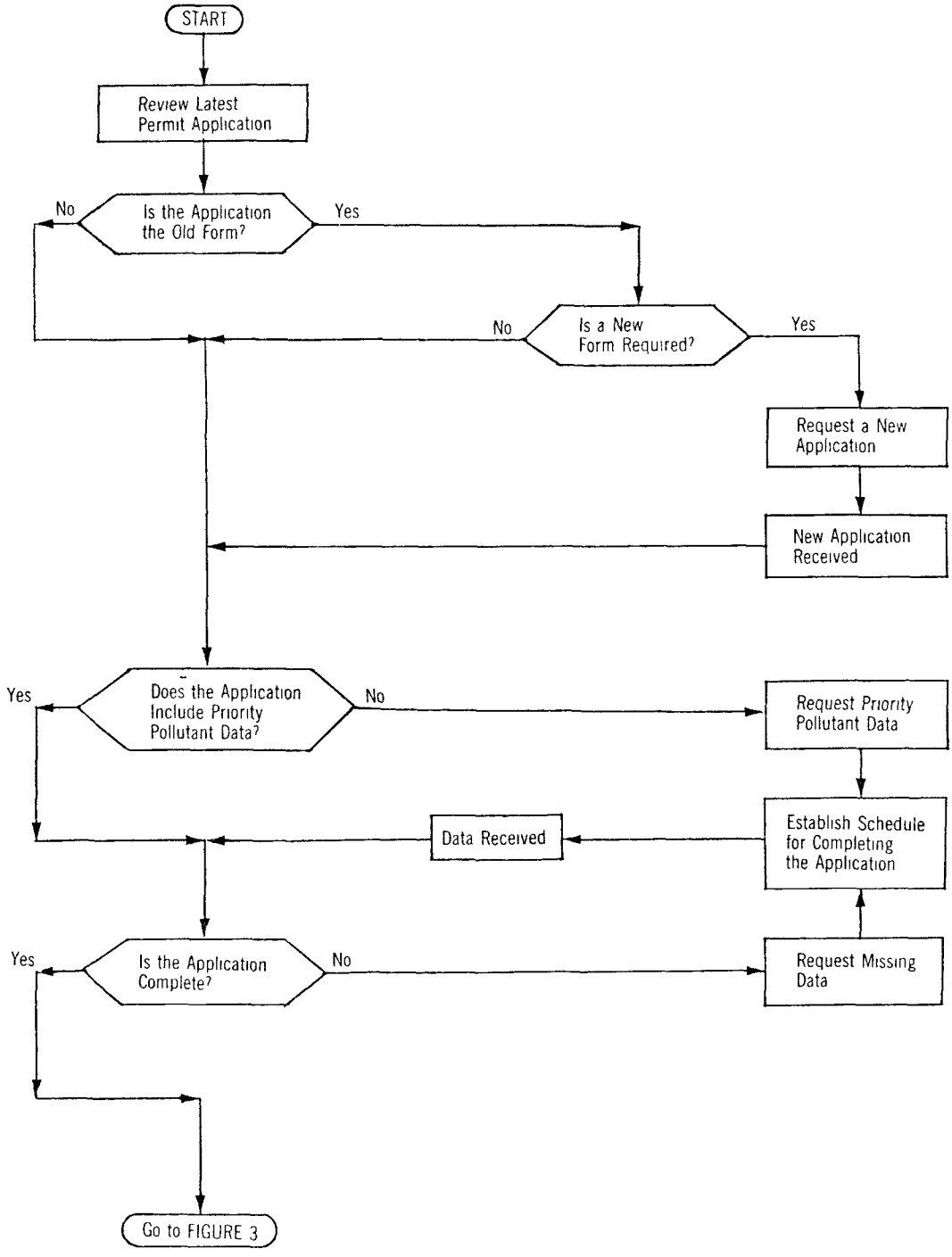
A key element in the preparation of a NPDES "second round" permit is a complete permit application. In most cases, an applicant for renewal of an expiring permit for an existing facility will have submitted the new Consolidated Permit Application Form 2c which incorporates all information required by the new permit regulations [40 CFR 122.53]. However, if the renewal application was submitted before April 30, 1980, a new application is not required. If the facility is a primary industry, supplemental data on priority pollutants in final effluents are required [122.53(d)(7)(ii) and 122.64(a)(2)].

The application requirements [122.53] allow some flexibility in limiting the amount of effluent data required for simple facilities and for facilities with multiple outfalls with similar waste characteristics. The permit writer should work with the applicant in these cases to minimize the sampling and analytical requirements consistent with obtaining adequate data to draft a complete permit.

Based on new data, the Permits Division has relaxed the effluent sampling requirements for several industry categories during the last year and may do so for other categories. The permit writer should consult the Permits Division Policy Book or the Permits Division directly to verify the latest application requirements before requesting supplemental information.

Information on the use or production of priority pollutants at a facility and adequate sampling data on priority pollutants in effluents are key to preparation of adequate permit limits for toxic pollutants. Experience has shown that priority pollutant data on the final effluent only may not be adequate for complex facilities where there are many internal waste streams which are then diluted by large volumes of cooling water prior to the sampling point. Data on the waste characteristics of these internal waste streams, particularly treatment unit effluents, may be needed to assess the adequacy of existing pollution controls and the feasibility of achieving greater reductions in the discharge of toxic (priority) pollutants.

FIGURE 2
PERMIT APPLICATION REVIEW



The authority for requesting such supplemental information is provided in 122.53(d)(13).

The applicant is required to submit production data only if a promulgated effluent guideline applies to the facility [122.53(d)(5)]. In many cases where permit limits are to be developed by BPJ procedures, production data may be needed so that proposed guidelines may be used, comparisons made with production levels on which the previous permit was based or other similar computations. A supplemental request would be needed in such cases. The applicant will usually request confidential treatment of such data.

BACKGROUND INFORMATION REVIEW [Figure 3]

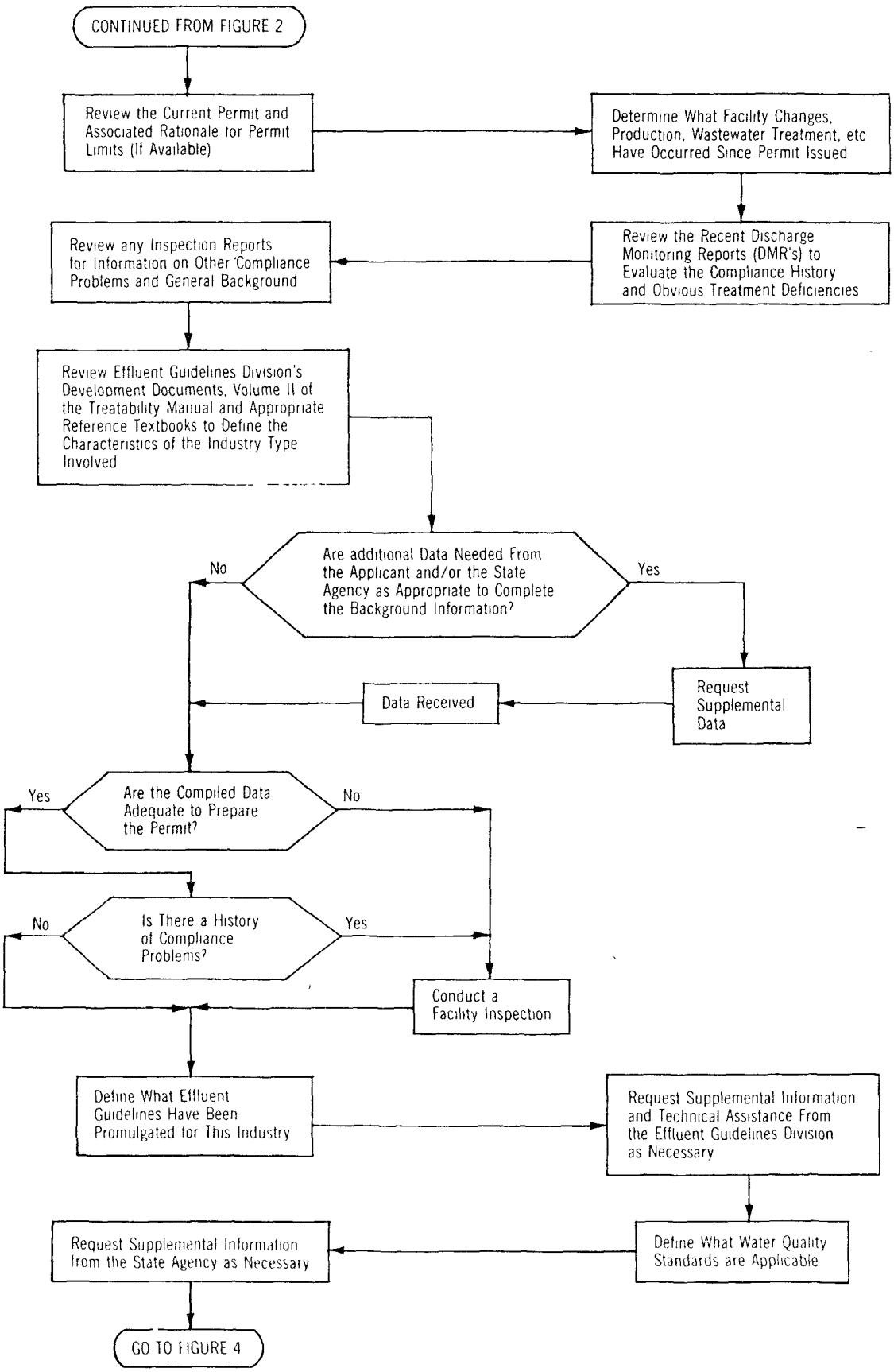
In addition to the permit application, several items of information will be needed to prepare the permit. Many of these will already be in the permit file or office. File information includes the current permit, the rationale for the current permit (if one was prepared), Discharge Monitoring Reports (DMR's), compliance inspection reports, and any correspondence concerning compliance problems, changes in plant conditions and communications with other agencies. Other information present in the office should include effluent guidelines, related Development Documents, reference textbooks on specific industry categories, the Treatability Manual, State Water Quality Standards and receiving water quality data.

This information should be reviewed for completeness. As needed, supplemental data may be requested from the State Agency, from EPA Effluent Guidelines Division and from the applicant.

FACILITY INSPECTION

"Second Round" permits are more complex than previous permits. For the permit writer to gain an adequate understanding of the more complex facilities so that adequate permit conditions can be prepared, it is highly desirable that a visit be made to the facility to personally inspect in-plant pollution controls, wastewater treatment facilities and ancillary activities

FIGURE 3
BACKGROUND INFORMATION REVIEW



that may discharge toxic or hazardous substances. This would be especially true if significant pollution control or treatment improvements will be required, if internal monitoring points are needed, if frequent problems in complying with the present permit have occurred, if there are known problems with spills or leaks or with contaminated surface runoff, and if there is onsite storage, treatment or disposal of hazardous wastes.

For the inspection to be most useful, it will require more than the hour discussion of plant activities and two hour walk/drive tour of waste treatment facilities and outfalls frequently conducted in the past. The inspection should include a detailed review of processes to evaluate what toxic or hazardous substances may be present in raw materials and associated contaminants, in products and in by-products; what are the water uses and resulting wastewater streams; and what are the in-process pollution controls. This information is needed to assist in selecting toxic pollutants to be limited and in evaluating possible in-process control improvements.

Wastewater treatment facilities, their performance and operation and maintenance practices should be reviewed. This is useful in evaluating the adequacy of existing treatment, in assessing the feasibility of improvements and in evaluating performance data.

Raw material and product storage and loading areas, sludge storage and disposal areas, hazardous waste management facilities including onsite disposal areas and all process areas should be observed to determine the need for controls on surface runoff and for specific best management practices.

Effluent monitoring points, sampling methods and analytical techiques should be reviewed to define any needed changes and to evaluate the quality of DMR data.

To conduct an adequate inspection at most facilities will require at least one day. For facilities with only a few basic processes, one main waste treatment system, limited in-process controls, few surface runoff outfalls and limited onsite management of sludges or hazardous wastes, an

adequate inspection can be completed in less than two days. Complex larger plants with several treatment systems, numerous outfalls and extensive ancillary activities can require a week to inspect.

Although time spent on plant inspections often results in time savings during permit preparation, time and/or travel resources are generally not adequate to allow inspection of all facilities that are desirable. In such cases, the permit writer may be able to obtain much of the desired information from the next compliance monitoring inspection. This requires advance planning to review the permit application and background information so that the compliance inspector can be alerted to specific information needs.

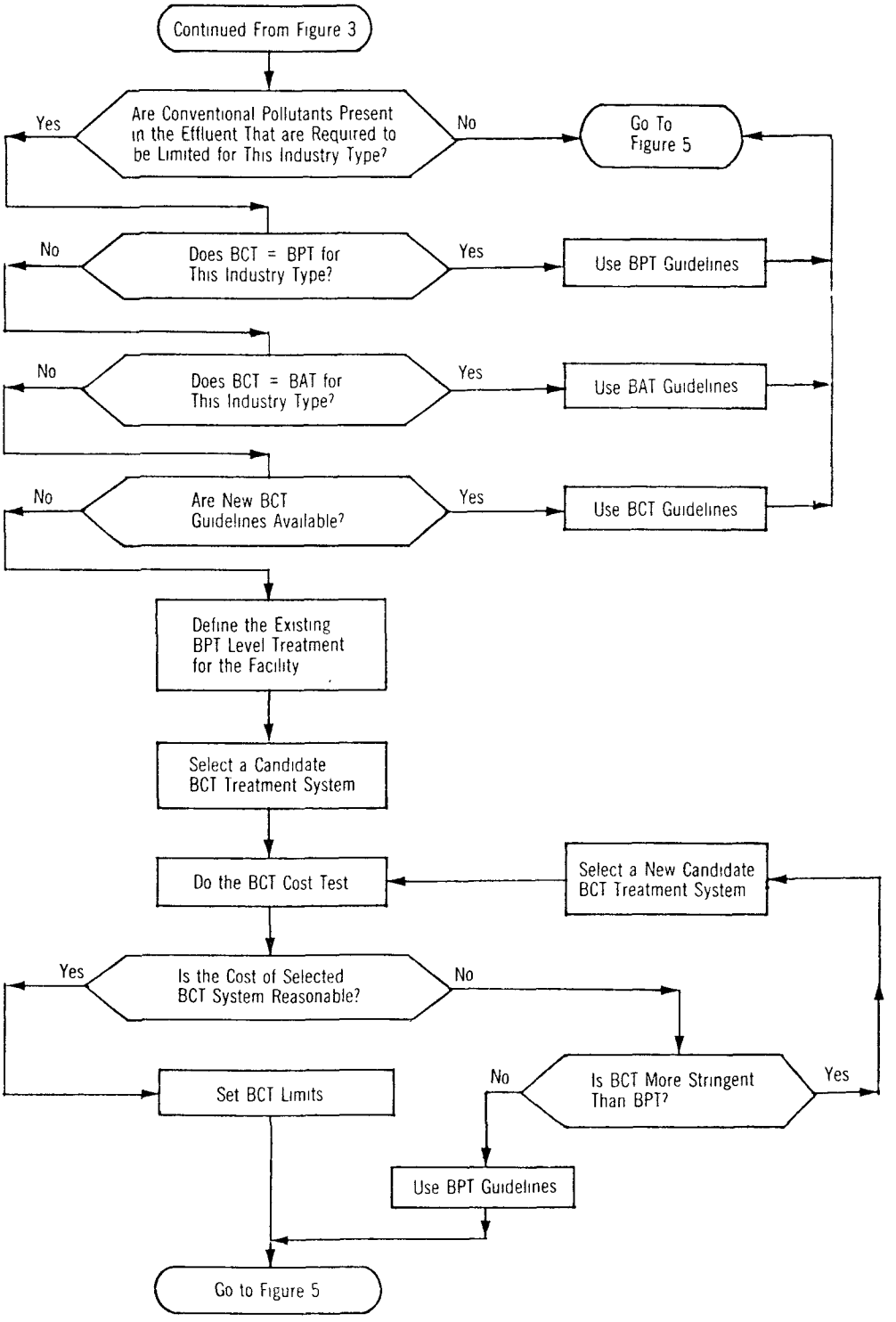
Aerial photographs are an excellent aid for conducting a plant inspection and may provide much of the needed information on the potential for contamination of surface runoff and on ancillary activities in the absence of an inspection. Aerial photographs may be obtained from a variety of sources including the Surveillance and Analysis Division in some Regions, the NEIC, EMSL-Las Vegas, and private contractors.

DEVELOP BCT LIMITS FOR CONVENTIONAL POLLUTANTS [Figure 4]

Almost all permits will contain effluent limits on one or more conventional pollutants (BOD, TSS, oil and grease, pH and fecal coliform). Unless a facility does not discharge conventional pollutants or they are controlled by limits on other parameters, the permit must contain effluent limits requiring the application of best conventional pollutant control technology (BCT) by July 1, 1984.

The development of effluent guidelines for BCT involves a cost test comparing the unit cost of conventional pollutant removal for an industrial category with the unit cost of removal in a publicly owned treatment facility (POTW). EPA completed this test on many industry categories for which BPT and BAT guidelines had been promulgated (44 FR 50732). For some industry categories (primarily secondary industries), BCT was determined to be equal to either BPT or BAT. For other industries, BCT effluent guidelines

FIGURE 4
BCT LIMITS



would need to be established. Currently, very few new BCT effluent guidelines have been promulgated although many are under development or proposed.

The cost test used in evaluating existing effluent guidelines and also used in BPJ procedures for developing effluent limits on a permit specific basis in the absence of applicable guidelines has been the subject of much controversy and a major court case. This has affected both the use of promulgated guidelines and the BPJ procedures outlined below. The permit writer is cautioned to consult the latest Permits Division policy guidance on this matter before establishing any BCT effluent limits.

The initial step in establishing BCT limits is to determine if any conventional pollutants should be limited [Figure 3]. In the absence of effluent guidelines, this may be determined from the previous permit, from proposed guidelines, or from Development Documents.

Industry categories for which BCT = BPT or BAT are listed in the BCT Cost Test Guidance document published by the Permits Division in September 1980. The availability of new BCT guidelines can be determined from the Effluent Guidelines Division.

If conventional pollutants are to be limited and effluent guidelines are not available, then BPJ procedures should be used to develop effluent limits. The existing treatment system for the facility should be defined and compared to the model treatment system used in the applicable Development Document as a basis for BPT effluent guidelines. This will give an indication if the present treatment units are equal to or better than BPT. If the present system is essentially BPT, then possible treatment improvements should be evaluated. Information on candidate improvements can be obtained from the Development Document, the Treatability Manual and any studies done by the applicant. The most feasible of possible improvements should then be selected as a candidate for cost testing.

The BCT Cost Test Guidance document defines the methodology to be used. Essentially, the unit cost of additional removal of conventional pollutants

achieved by the candidate improvements is compared to the equivalent cost of removal in a POTW. This requires estimating the capital and operating costs of the improvements. Such cost data may be available in the Development Document, the Treatability Manual or from studies by the applicant.

If the candidate treatment system improvements pass the cost test, they are used as the basis for estabishing BCT limits. Otherwise, a new candidate system is selected and the cost test repeated. If no improvements pass the cost test, the existing treatment system becomes BCT for that facility. This will often happen when the existing treatment system achieves high levels of conventional pollutant removal or low effluent concentrations or when the waste flow treated is small. To establish BCT limits based on the existing treatment system will often involve basing the limits on long-term DMR data.

Once the BCT treatment and/or control system has been selected, the expected performance of that system must be converted into effluent limits. When the existing system is defined as BCT, then the effluent limits may possibly remain the same as in the previous permit, or if DMR data shows the system consistently achieves substantially lower concentrations/loads, the limits may be lowered. Care should be taken, however, to not lower the limits too close to actual plant performance in such cases or occasional permit violations will be generated by normal variations in plant performance. The purpose of lower limits would be to insure the future operation of the treatment system at demonstrated levels of performance.

If BCT involves treatment/control improvements, then effluent limits must be based on expected performance of the improvements. Engineering judgement, performance data on similar plants, the Treatability Manual and Development Documents and engineering studies performed by the applicant are all possible sources of data on expected performance. Often these data will be in the form of effluent concentrations. Mass limits (required by 122.63(f)) must then be computed, usually based on daily average and daily maximum flows reported in the DMR's. It will usually not be feasible to develop mass limits directly related to production.

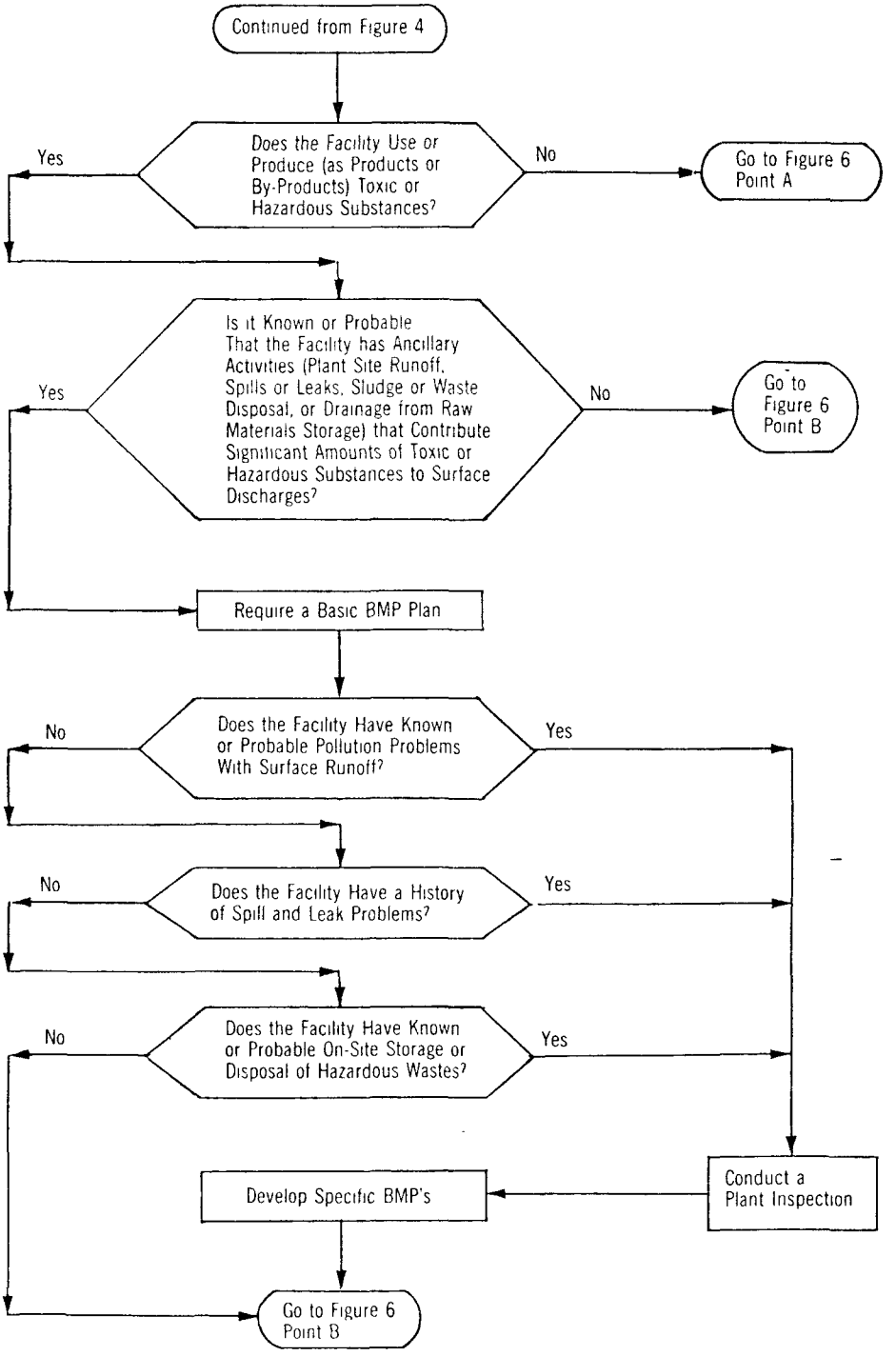
DEFINE BEST MANAGEMENT PRACTICES [Figure 5]

Under 40 CFR 122.62(k), permits shall include best management practices (BMPs) conditions to control or abate the discharge of pollutants whenever BMPs are prescribed in applicable effluent guidelines, when numerical effluent limitations are infeasible (such as in some types of storm runoff problems) or when such practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the Clean Water Act (Act). In addition, regulations prescribing how BMPs are to be applied to control discharges of toxic pollutants (as listed under Section 307(a) of the Act) or hazardous pollutants (listed under Section 311 of the Act) have been promulgated in 40 CFR Part 125, Subpart K, Criteria and Standards for Best Management Practices. The effective date of Subpart K has been suspended indefinitely and it is expected that these regulations will be revised and reproposed during 1981.

There are currently few promulgated effluent guidelines containing BMPs. Therefore, BMP conditions will usually need to be developed by BPJ. Although suspended, the Subpart K regulations contain good guidance on developing BMPs. Additional information is contained in the technical support document "NPDES Best Management Practices Guidance Document". The draft version of this document distributed in early 1980 contains detailed information on site-specific BMPs. Some recent Development Documents contain information on industry type specific BMPs.

Usually BMPs will be specified only when the conditions described in Subpart K are present. The initial step [Figure 5] in determining the applicability of BMPs then is to determine if the facility uses, produces (as an intermediate, product or by-product), stores, handles or discharges toxic or hazardous substances. The determination must then be made if significant amounts of these substances may be contributed by ancillary manufacturing operations including material storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas. If a potential for significant discharges of toxic or hazardous substances exists, the permit

FIGURE 5
BASIC MANAGEMENT PRACTICES



should require the facility to develop a basic BMP plan for control of such discharges. Both sample permits in Section III contains suggested standard conditions for a facility requiring a basic BMP plan.

In addition to the BMP plan, it will often be desirable to prescribe site-specific BMPs. This is especially true when there are known or probable surface runoff problems, a history of spills and leaks, the handling of highly toxic substances or the onsite treatment, storage and/or disposal of hazardous wastes. To develop site-specific BMPs will usually require that a plant inspection be conducted. Several site-specific BMP conditions are included in the second sample permit.

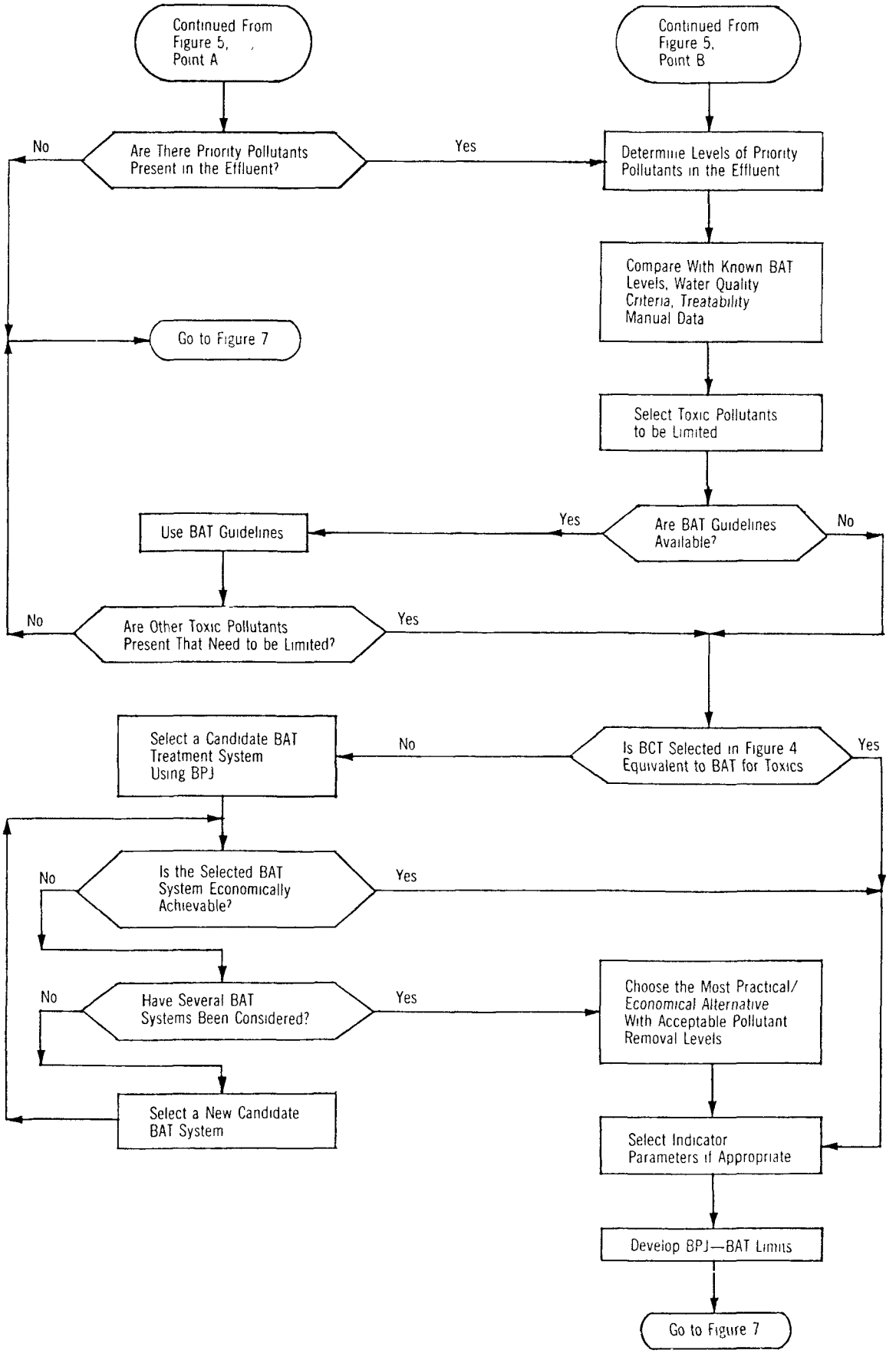
Because of the delays in implementing the RCRA permit program, the use of BMPs in NPDES permits may be an appropriate means of prescribing adequate environmental controls on the onsite storage, treatment and disposal of hazardous wastes. The permit writer is cautioned to be sure such BMP conditions are compatible with Interim Status Standards (Part 265) or Permit Standards (Part 264).

DEVELOP BAT LIMITS FOR TOXIC POLLUTANTS [Figure 6]

A major difference between previous permits and BAT permits is the requirement that effluent limits must be established for toxic (priority) pollutants (as defined by Sec. 307(a)(1) of the Clean Water Act) which may be handled or discharged by the facility. Previous permits contained few, if any, limits on toxic pollutants. When limited, these ususally were heavy metals, most frequently chromium and zinc because of their widespread use as corrosion inhibitors in cooling water systems.

Not all facilities will require effluent limits on toxic pollutants; many secondary industries will not while most primary industries will. To determine if such limits are required, the permit writer should review the raw materials, intermediates, and products of the facility and effluent data. As shown in Table 1 and in Figures 1 and 6, one should then determine if toxic pollutants are used or produced as products, intermediates,

FIGURE 6
BAT LIMITS FOR TOXIC SUBSTANCES



or by-products. If so, permit regulations [122.62(e)(1)] require that all toxic pollutants used or produced must be limited in the permit directly or by limits on other pollutants that assure adequate treatment of the toxic pollutants.

In addition, the permit writer should review the effluent data to determine if any toxic pollutants not used or produced are present in the effluent at levels greater than appropriate BAT levels for the pollutant and type of facility. Such pollutants may originate as contaminants in raw materials and products or from ancillary non-process operations. Effluent limits must be established to either directly or indirectly limit any pollutants present at elevated levels. These requirements for toxic pollutant limits for substances used or produced or discharged at elevated levels apply on a case-by-case basis regardless of what, if any, toxic pollutants are limited by applicable effluent guidelines.

In the absence of appropriate effluent guidelines, the determination of what pollutants are present at elevated levels must be made using BPJ procedures. Effluent data for other similar plants, Development Documents for this or similar industry types, the treatability manual and other references on treatment of toxic wastes may be used to determine acceptable discharge levels. An alternate approach would be to use the EPA published water quality criteria for priority pollutants and the low flow volume in the receiving water to determine if the mass discharged is excessive. Since these criteria are not water quality standards, basing effluent limits directly on this approach usually will not be feasible.

An evaluation of the existing treatment system may often assist in the selection of pollutants to be limited. If some pollutants are used in small amounts, they may not need to be limited directly if the treatment system will achieve high levels of removal of both these pollutants and another substance present in larger amounts that can be used as an indicator.

The treatment system evaluation should also determine the adequacy of present controls. In some cases, the treatment system may be basically

adequate for overall control of process wastewater but additional control of specific toxic substances will be needed. Often this can be achieved most economically by in-process changes or controls or by treatment units on selected small process wastewater streams. To make such determinations, however, will often require a combination of in-depth knowledge of the process, a detailed site inspection and/or additional sampling data on the small wastestream. Information on appropriate BAT controls on toxic pollutants can be found in both the Treatability Manual and various Development Documents. The selection of BCT improvements may also have provided possible candidate treatment improvements. Once candidate treatment improvements have been selected, their economic achievability must be evaluated. Sometimes this will be obvious when the costs are either low or very high. No specific guidelines for evaluatiing economic achievability are presently available. In the absence of either a clear pass or fail, the permit writer may wish to contact the Permit Division in Headquarters for the latest information or for assistance.

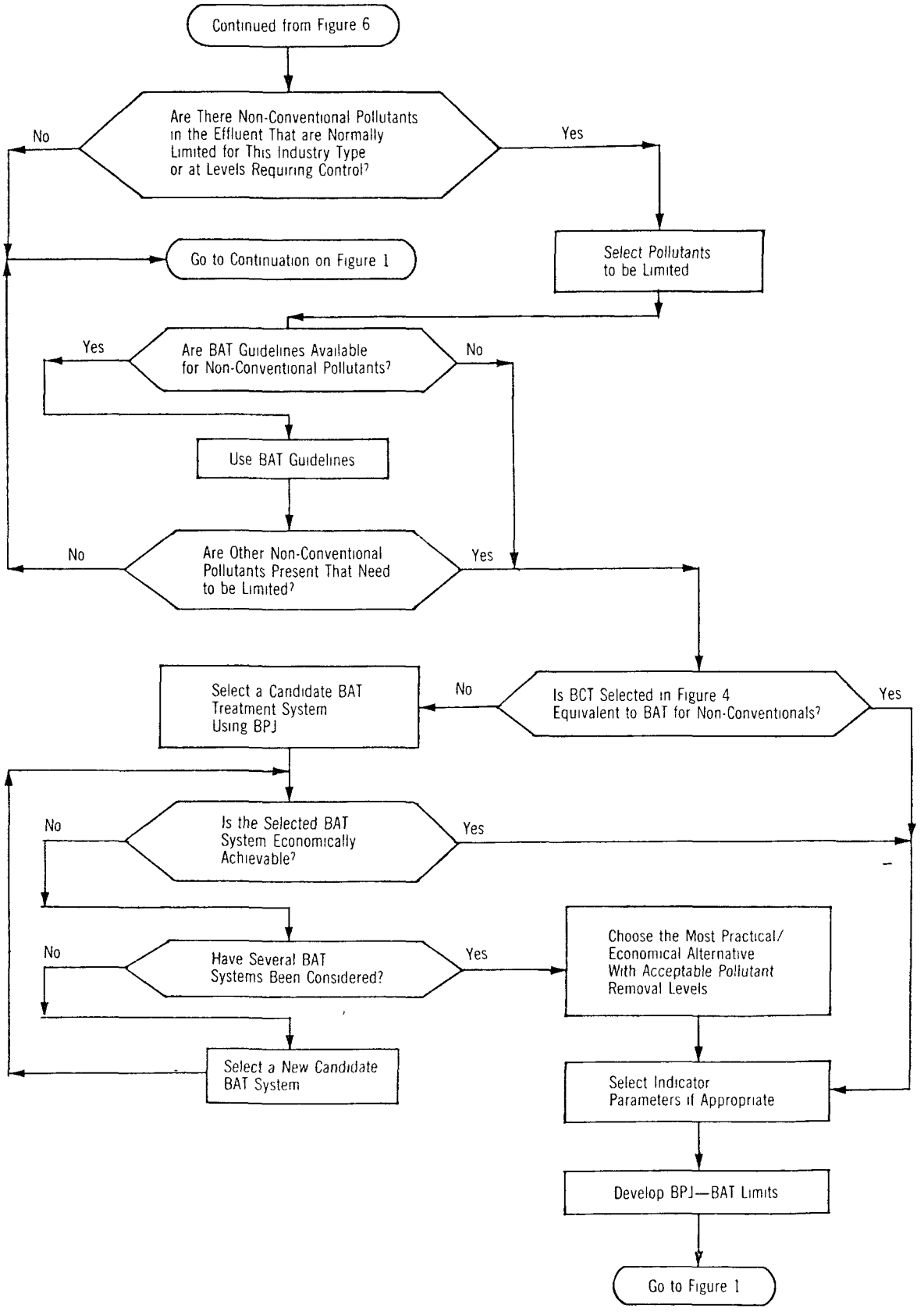
When treatment improvements have been selected, these must be translated into effluent limits. Normally, expected effluent concentrations will have been developed during the selection process or were available for a given treatment unit. These must then be converted to mass limits using appropriate waste flow volumes.

DEVELOP BAT LIMITS FOR NON-CONVENTIONAL POLLUTANTS [Figure 7]

The development of BAT effluent limits for non-conventional pollutants proceeds in essentially the same manner as for toxic pollutants. There are no requirements, however, that specific substances must be limited. Selection of pollutants to be limited will usually involve a combination of factors such as pollutants limited in BPT guidelines, limits in the previous permit, raw materials or products, and reported effluent characteristics. Selection of treatment improvements and development of effluent limits should then proceed in the same manner as for toxic pollutants.

The applicant may request exemption of certain hazardous substances from Section 311 requirements. These substances may be either toxic or

FIGURE 7
BAT LIMITS FOR NON-CONVENTIONAL POLLUTANTS



non-conventional pollutants. Special permit conditions and documentation as required by 40 CFR 117 may be necessary in such cases.

EVALUATE WATER QUALITY CONSIDERATIONS [Figure 1]

In cases where the receiving water is small, the pollutant load discharged is large, the receiving water receives other waste discharges, or a combination of these factors, effluent limits may be related to water quality factors. The permit writer should determine if the previous permit was water quality limiting or any of these condistions exist. If waste load allocations have been made, the permit will need to have one or more limits based on these allocations.

To determine if water quality limiting conditions exist in the absence of waste load allocations, the permit writer should determine allowable waste loads based on applicable water quality criteria, an appropriate low stream flow volume (usually the 7-day low flow occuring once in 10 years), and upstream water quality. In some cases, simple water quality modeling may be necessary. The allowable waste loads are compared to the technology-based effluent limits developed wn the previous steps and the minimum value selected.

DEVELOP MONITORING REQUIREMENTS

Appropriate monitoring requirements should be specified based on such factors as effluent and process variability, previous permit requirements, State and/or Regional policy and/or regulations. Toxic pollutants require particular care in selecting appropriate monitoring frequencies because of high analytical costs. Examples of monitoring requirements and rationales for toxics monitoring programs are presented in the two sample permits (Section III).

DEVELOP COMPLIANCE SCHEDULES

If treatment improvements, BMPs, or other changes are required, compliance schedules specifying a time frame for completion should be established. These must consider the complexity of the improvements, seasonal factors, and statutory requirements. Schedules should include interim reporting requirements when appropriate. No periods between steps should exceed one year.

PREPARE A RATIONALE

The preparation of a BPJ type permit is complex. To fully substantiate the basis for a permit, a detailed rationale must be prepared. When properly done, this will communicate clarifiying information to the permittee and to the public and will make defense of the permit conditions much simpler for the permit writer. Sample rationales are presented in Section III.

III. SAMPLE NPDES PERMITS AND RATIONALES

Two sample NPDES permits are presented in this section as examples of the application of the permit development steps (Section II, Table 1) to actual permit cases. The samples are actual draft permits and associated data with the exception that fictious names and places have been substituted.

Two different permit formats are presented. One is a format suitable for issue by EPA. The other is an adaption to a specific State format which represents a modification of the previous format used by that State.

Sample rationales are also presented in both cases. These rationales give a detailed description of each facility, the specific steps followed in the development of each permit, and the basis for all effluent limits and permit conditions. With the exception of an evaluation of the economic achievability of BAT effluent limits, all of the permit development steps listed in Table 1 were used in one or both cases. Such an economic analysis was not required in these cases.

The rationales were prepared as part of a technical assistance project and are more detailed than may be necessary for permit purposes because they incorporate appropriate observations from the facility inspections. Such observations could be reported in a separate trip report as part of the permit support documents. The permit writer is cautioned, however, that most of the information presented in the sample rationales will be necessary in most cases to defend the basis for permit limits or conditions developed using BPJ procedures. Two slightly different formats were used for the sample rationales reflecting the flexibility possible in these documents.

SAMPLE EPA PERMIT

The sample EPA permit has the following format which is similar to the old EPA permit forms.

Part I.	Effluent Limitations and Monitoring Requirements
Part II.	Standard Conditions
Part III.	Other Requirements
Part IV.	Best Management Practices Conditions

Part I is typed on the old EPA permit forms. Effluent limits include conventional, non-conventional, and toxic (heavy metals and toxic organics) pollutants.

Part II contains new standard conditions developed for the Region VII project. They contain all of the permit conditions required by the May 19, 1980 Consolidated Permit Regulations. Much of the language is taken directly from the permit regulations without modification. However, the order of presentation has been changed to group conditions in a more logical manner. A condition concerning flow measurement (Section C, Item 2) was added because of the almost universal problem with flow measurement devices observed during compliance inspections and the lack of specific regulations concerning this.

Part III, Other Requirements, contains special conditions specific to this facility and may be omitted from some permits.

Part IV contains standard Best Management Practices (BMP) conditions which will usually be inserted in the permit if a facility uses, produces, or discharges toxic or hazardous pollutants and has ancillary manufacturing operations (such as material storage areas, plant site runoff, in-plant transfers, process and material handling areas, loading and unloading operations, and sludge and waste disposal areas) which could result in significant amounts of these pollutants reaching waters of the United States. Frequently these conditions will be present at primary industry type facilities but usually will not be present at secondary industry type facilities.

These general conditions basically require the facility to prepare a BMP plan that identifies specific sources of toxic or hazardous pollutants and that either lists exisiting BMPs applicable to each source or describes BMPs to be implemented for each source. These conditions were developed based on the latest version of proposed revisions of Part 125 Subpart K regulations in late 1980. Revision of these regulations is anticipated in 1981 that may require minor modification of these conditions.

For some permits, it may be desirable or necessary to include specific BMP conditions to cover particular sources of toxic or hazardous wastes or specific problem areas best mitigated by BMPs. Such conditions could be inserted as Section B of Part IV. Examples of specific BMP conditions are contained in the second sample permit.

As shown in Table 2, the format of the Rationale is divided into three main sections. The first section provides background information concerning facility characteristics and processes, wastewater treatment facilities, and water quality standards for the receiving stream. The amount of detail required is dependent on the availability of the information in other references, the complexity of the facility, and the level of existing wastewater treatment and controls. Extensive detail may be required for the last item in complex facilities or when the exisiting facility is either exemplary or requires major improvements. In the sample case, substantial data were presented because this informaion was primarily derived from the NEIC plant inspection and the wastewater treatment facility was considered to be essentially BAT.

The second section provides the key information supporting all effluent limits developed by BPJ procedures. It should have all information required by the permit regulations. The location of and waste streams contained in each discharge are described. The basis for interim and final effleunt limits are then described in detail. In this case, the limits were primarily based on a recent EGD Development Document applicable to this type facility. Interim limits were based on a model BPT treatment system with final limits based on a model BAT treatment system. Concentration limits

Table 2

OUTLINE OF RATIONALE - EPA PERMIT

I. Description of Facility

- A. Background
- B. Waste Treatment
  - 1. Outfall 001
    - a. Miscellaneous Wastes Tank
    - b. Acid-Alkali Surge Tank
    - c. Cyanide Surge Tank
    - d. Interceptor Tank
    - e. Chrome Surge Tank
    - f. Solids Removal System
  - 2. Outfall 002
- C. Water Quality Standards

II. Rationale for Effluent Limits

- A. Outfall 001
  - 1. Location
  - 2. Waste Streams
  - 3. Basis for Effluent Limits
    - a. Background
    - b. Metals and TSS
    - c. Fluoride
    - d. Oils & Toxic Organics
    - e. Hazardous Substances
- B. Outfall 002
  - 1. Location
  - 2. Waste Streams
  - 3. Basis for Effluent Limits
    - a. Metals
    - b. Fluoride
    - c. Oils and Toxic Organics
    - d. pH

III. Monitoring Requirements

from the model treatment systems were converted to the required mass limits based on reported discharge rates.

Only limited data were available on toxic organic pollutants. The permit requires frequent montoring for selected toxic organics for the first six months to develop additional data. Based on the results of this monitoring, the need for additional treatment, if any, to meet the final effluent limits will be determined. Periodic monitoring for other toxic organics found by EGD at other similar plants, but either not detected or detected at low levels at this plant, is required to demonstrate their continued insignificance.

Exemption of various hazardous substances from Section 311 regulations was requested by the Applicant in this case. The Rationale details the basis for direct or indirect limits on these substances.

The third section of the Rationale lists the basis for monitoring requirements.

SAMPLE STATE PERMIT

The sample permit is in a specific state format that has been modified to reflect additional requirements of the consolidated Permit Regulations. It differs from the EPA format primarily in that standard permit conditions are handled by reference to State regulations (a copy is sent to the Permittee with the permit) rather than explicitly. The format is as follows:

Permit Sheet
General Conditions
Appendix A - Effluent Limitations
Appendix B - Monitoring and Reporting Requirements
Appendix D - Schedule of Compliance
Appendix E - Other Requirements
Appendix F - Best Management Practices
Rationale

Interim and final limits for the main process wastewater discharge (Appendix A) include limits on conventional, non-conventional, and toxic

pollutants (metals and organics). There are four stormwater discharges. No effluent limits are specified in the permit but monitoring for one year is required to develop a data base from which effluent limits may be established, if necessary.

The General Conditions section contains standard conditions applicable to all permits. In contrast to the previous permit, most conditions incorporate specific regulatory language by reference to state regulations rather than direclty in the permit. Some State standard conditions may not contain all the necessary conditions. The omissions may be placed in the Other Requirements section in such cases.

Appendix B specifies typical monitoring requirements for the main outfall and additional short-term monitoring for selected toxic organics. In addition, extensive operational monitoring within the wastewater treatment system is specified, a State requirement.

BMP conditions are contained in Appendix F. Section A contains general conditions identical to the EPA sample permit. Examples of specific BMP conditions unique to this facility are contained in Section B.

As shown in Table 3, the format of the sample State permit rationale is similar to the EPA permit rationale but differs somewhat in lower levels of subdivision, primarily in the grouping of discussion by pollutant type. This order more closely tracks the permit development steps in Table 1.

A brief background section is presented to describe the facility and waste treatment units. A separate inspection report was prepared to provide more detail in this case.

The next section describes the basis for effluent limits for the main outfall. In addition to the information presented in the EPA rationale format, the various supporting documents are listed because they were numerous.

Table 3

OUTLINE OF RATIONALE - STATE PERMIT

DESCRIPTION OF FACILITY

RATIONALE FOR EFFLUENT LIMITS

1. Location
2. Waste Streams
3. Basis for Limitations
    a. Interim Limits
    b. Final Limits
4. Effluent Limits
    a. Conventional Pollutants
        1. BOD
        2. TSS
    b. Non-Conventional Pollutants
        1. COD
        2. Phenols
    c. Toxic Substances (Priority Pollutants)
    d. Hazardous Substances
    e. Monitoring Requirements

STORMWATER MONITORING

1. Outfall 002
2. Outfall 003
3. Outfall 004
4. Outfall 005

PRIORITY POLLUTANT MONITORING

A detailed discussion of the basis for proposed effluent limits for conventional pollutants then follows. The existing treatment facility required some improvement to meet BCT limits. The BCT cost test was used to determine acceptable treatment improvements. The reader is cautioned to not use the methodology presented in this Rationale for the BCT cost test without verifying current procedures. The BCT cost test procedure presented was involved in litigation at the time of manual preparation and EPA anticipated making revisions to the method as a result.

A detailed discussion concerning the selection and limiting of toxic pollutants is presented next. An approach similar to the other permit is used to develop a data base for use in determining the need for treatment improvements to meet BAT limits. Both direct limits on toxic pollutants and indirect limits using indicator parameters are included in the permit. There is also the basis for modifying or droping monitoring requirements for various toxic pollutants.

A major section outlines the basis for control of stormwater monitoring. The bases for specific BMP conditions are also detailed.

SAMPLE EPA PERMIT

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DEPARTMENT OF ENVIRONMENTAL CONTROL
AUTHORIZATION TO DISCHARGE UNDER THE STATE OF CORONADO
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal water Pollution Control Act, as amended (33 U.S.C. 466 et. seq), the Coronado Environmental Protection Act (Secs. 81-1505(3)(4)(5)(6) & (7), 81-1504(15)(25), 81-1510(2), R.R.S. 1943), and the Rules and Regulations promulgated pursuant thereto,

Yucatan Electric Company

is authorized to discharge from a facility located at

North 1/2, Section 6, Township 14N, 12E, Mayan County

to receiving waters named

Inca Creek and West Montezuma Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

_____
Director

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - INTERIM

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During the period beginning on the effective date and lasting through June 30, 1984 the permitee is authorized to discharge from outfall(s) serial number(s) 001

Such discharges shall be limited and monitored by the permitee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	kg/day (lbs/day)*		Other Units (Specify) (mg/l)		Measurement Frequency	Sample Type
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.		
Flow-m^3/Day (MGD)	--	--	--	--	Continuous	Totalizer
Cyanide, total	0.49 (1.07)	1.61 (3.55)	0.56	1.85	Weekly	24 hr. comp.
Copper	0.42 (0.92)	1.57 (3.45)	0.48	1.80	Weekly	24 hr. comp.
Chromium, total	0.39 (0.86)	1.08 (2.38)	0.45	1.24	Weekly	24 hr. comp.
Chromium, hexavalent	0.05 (0.10)	0.15 (0.33)	0.05	0.17	Weekly	24 hr. comp.
Nickel	0.63 (1.38)	1.40 (3.07)	0.72	1.60	Weekly	24 hr. comp.
Zinc	0.28 (0.61)	0.65 (1.42)	0.32	0.74	Weekly	24 hr. comp.
Lead	0.04 (0.08)	0.09 (0.19)	0.04	0.10	Weekly	24 hr. comp.
Cadmium	0.01 (0.03)	0.03 (0.06)	0.02	0.03	Weekly	24 hr. comp.
Iron	0.29 (0.63)	0.65 (1.44)	0.33	0.75	Weekly	24 hr. comp.
Residual Chlorine	0.01 (0.02)	0.09 (0.20)	0.01	0.10	Weekly	grab
TSS	14.4 (31.7)	32.1 (70.6)	16.5	36.8	Weekly	24 hr. comp.
Oils	8.1 (17.7)	18.0 (39.5)	9.2	20.6	Weekly	grab

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored weekly

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Sample taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at a point following the wastewater treatment plant and prior discharge to Inca Creek.

*The mass loadings (kg/day) are based on a two shift operation and an average flow of 0.23 MGD. Should the plant begin a 3 shift operation the mass loadings will be allowed to increase proportional to a flow of 0.39 MGD.

During the period beginning July 1, 1984 and lasting through the expiration date of the permit, the permitee is authorized to discharge from outfall(s) serial number(s) 001

Such discharges shall be limited and monitored by the permitee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	kg/day (lbs/day) *		Other Units (Specify) (mg/l)		Measurement Frequency	Sample Type
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.		
Flow-m^3/Day (MGD)	--	--	--	--	continuous	totalizer
Cyanide, total	0.49 (1.07)	1.61 (3.55)	0.56	1.85	weekly	24 hr comp
Copper	0.42 (0.92)	1.57 (3.45)	0.48	1.80	weekly	24 hr comp
Chromium, total	0.39 (0.86)	1.08 (2.38)	0.45	1.24	weekly	24 hr comp
Chromium, hexavalent	0.05 (0.10)	0.15 (0.33)	0.05	0.17	weekly	24 hr comp
Nickel	0.63 (1.38)	1.40 (3.07)	0.72	1.60	weekly	24 hr comp
Zinc	0.28 (0.61)	0.65 (1.42)	0.32	0.74	weekly	24 hr comp
Lead	0.04 (0.08)	0.09 (0.19)	0.04	0.10	weekly	24 hr comp
Cadmium	0.01 (0.03)	0.03 (0.06)	0.02	0.03	weekly	24 hr comp
Iron	0.29 (0.63)	0.65 (1.44)	0.33	0.75	weekly	24 hr comp
Flouride	5.4 (11.9)	12.1 (26.5)	6.19	13.8	weekly	24 hr comp
Residual Chlorine	0.01 (0.02)	0.09 (0.20)	0.01	0.10	weekly	grab
TSS	14.4 (31.7)	32.1 (70.6)	16.5	36.8	weekly	24 hr comp
Oils	8.1 (17.7)	18.0 (39.5)	9.2	20.6	weekly	grab
Phenols	0.10 (0.20)	0.52 (1.15)	0.10	0.60	1/3 months	grab
TTO**	-- --	-- --	--	--	1/year	**

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored weekly.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Sample taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at a point following the wastewater treatment plant and prior to discharge to Inca Creek.

*The mass loadings (kg/day) are based on a two shift operation and an average flow of 0.23 MGD. Should the plant begin a 3 shift operation the mass loadings will be allowed to increase proportional to a flow of 0.39 MGD.

**Total Toxic Organics. Shall include all parameters listed in Part V-C of the NPDES permit application under GC/MS Fraction for Volatile, Acid, and Base/Neutral compounds. A grab sample shall be collected for the volatile analysis and a 24 hr. composite for the Acid and Base/Neutral.

C. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - FINAL

During the period beginning effective date and lasting through the expiration date of this permit. the permitee is authorized to discharge from outfall(s) serial number(s) 002

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Such discharges shall be limited and monitored by the permitee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) * Daily Avg.	Daily Max.	Other Units (Specify) (mg/l) Daily Avg.	Daily Max.	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-m^3/Day (MGD)					continuous	totalizer
Cyanide, total	0.55 (1.21)	1.82 (4.01)	0.56	1.85	1/2 weeks	24 hr comp.
Copper	0.47 (1.04)	1.77 (3.90)	0.48	1.80	1/2 weeks	24 hr comp.
Chromium	0.45 (0.98)	1.22 (2.69)	0.45	1.24	1/2 weeks	24 hr comp.
Nickel	0.71 (1.56)	1.58 (3.47)	0.72	1.60	1/2 weeks	24 hr comp.
Zinc	0.31 (0.69)	0.73 (1.60)	0.32	0.74	1/2 weeks	24 hr comp.
Flouride	6.1 (13.4)	13.6 (29.9)	6.19	13.8	1/2 weeks	24 hr comp.
Oils	9.1 (20.0)	20.1 (44.2)	9.2	20.6	1/2 weeks	grab
Phenols	0.10(0.22)	0.59 (1.30)	0.10	0.60	1/3 months	grab
TTO**	-- --	-- --	--	--	1/3 month	**

PART I
Page 4 of 4
Permit No.

- The pH shall not be less than 6.5 standard units nor greater than *** standard units and shall be monitored

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Sample taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): an existing manhole prior to discharge to West Montezuma Creek.

*Based on a flow of 0.26 MGD.

***When the pH of the water supplied by the Metropolitan Utilities District (MUD) is greater than 9.0, the effluent limit shall be the numerical value of the influent pH. The influent shall be sampled monthly for pH by grab sampling.

** Monitoring requirements for TTO do not become effective until July 1, 1984. TTO shall include all parameters listed in Part V-C of the NPDES permit application under GC/MS fraction for Volatile, Acid and Base/Neutral Compounds. A grab sample shall be collected for the volatile analysis and a 24 hr

analysis.

III-12

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Clean Water Act provides that any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $100,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Toxic Pollutants

Notwithstanding paragraph A-4, above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph B-3 and "Upsets" Section B, Paragraph B-4, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs c and d of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, Paragraph D-6 (24-hour notice).

d. Prohibition of bypass.

(1) Bypass is prohibited and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under paragraph c of this section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph d(1) of this section.

4. Upset Conditions

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph c of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the specific cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in Section D, Paragraph D-6.

(4) The permittee complied with any remedial measures required under Section A, Paragraph A-3.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10% from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable flow measurement devices can be obtained from the following references:

1. "A Guide to Methods and Standards for the Measurement of Water Flow", U. S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U. S. Government Printing Office, Washington, D. C. 20402. Order by SD catalog No. C13.10:421).

2. "Water Measurement Manual", U. S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U. S. Government Printing Office, Washington, D. C. 20402. Order by Catalog No. I27.19/2:W29/2, Stock No. S/N 24003-0027.)

3. "Flow Measurement in Open Channels and Closed Conduits, U. S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.

4. "NPDES Compliance Sampling Manual", U. S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. (Available from the General Services Administration (8FFS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225.

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3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) form (EPA No. 3320-1). Monitoring results obtained during the previous __ months shall be summarized for each month and reported on a DMR form postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on _____. Duplicate copies of DMR's signed and certified as required by Section D, Paragraph D-11, and all other reports required by Section D, Reporting Requirements, shall be submitted to the Regional Administrator and the State at the following addresses:

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of

all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

9. Record Contents

Records of monitoring information shall include:

a. The date, exact place, time and methods of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used: and

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alternations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit is nontransferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified in Section C, Paragraph C-5 (Monitoring).

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

The following shall be included as information which must be reported within 24 hours:

a. Any unanticipated bypass which exceeds any effluent limitation in the permit.

b. Any upset which exceeds any effluent limitation in the permit.

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part I of the permit to be reported within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Section D, Paragraphs D-1, D-4, D-5, and D-6 at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph D-6.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(1) One hundred micrograms per liter (100 µg/l);

(2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2.4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony:

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application;

(4) The level established in Part I of the permit by the Director.

b. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit,

or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

11. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice-president;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above.

(2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

(3) Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

PART III
OTHER REQUIREMENTS

1. Yucatan Electric shall analyze discharge 001 and 002 for phenols and fluorides once a month for the first 6 months following permit issuance.

2. The results of each analysis shall be reported to the Director every quarter along with the Discharge Monitoring Reports.

3. After 6 months of monitoring Yucatan Electric shall submit a report to the Director evaluating the data. This report shall indicate what, if any, treatment improvements will be needed to meet final effluent limits and shall propose a schedule leading to compliance by July 1, 1984.

DRAFT

PART IV

STANDARD BEST MANAGEMENT PRACTICES CONDITIONS

SECTION A. GENERAL CONDITIONS

1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle or discharge any pollutant listed as toxic under Section 307(a)(1) of the Clean Water Act or any pollutant listed as hazardous under Section 311 of the Act and who have ancillary manufacturing operations which could result in significant amounts of these pollutants reaching waters of the United States. These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan which prevents, or minimizes the potential for, the release of toxic substances from ancillary activities to the waters of the United States through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

3. Implementation

The plan shall be developed within six months of the permit application and shall be implemented as soon as practicable but not later than one year after the effective date of the permit or 18 months after the permit application, whichever is sooner, unless a later date is specified by the Director.

4. General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings or maps.

b. Establish specific objectives for the control of toxic and hazardous pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance.

c. Establish specific best management practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States.

d. Include any special conditions established in Part B of this section.

e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document" and shall include the following base line BMP's as a minimum:

a. BMP Committee
b. Reporting of BMP Incidents
c. Risk Identification and Assessment
d. Employee Training
e. Inspections and Records
f. Preventive Maintenance
g. Good Housekeeping
h. Materials Compatibility
i. Security

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq). Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available to the Director upon request.

9. BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of hazardous or toxic pollutants.

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to surface waters and the specific objectives and requirements under paragraphs b and c of Section 4, the permit and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements.

SAMPLE RATIONALE FOR EPA PERMIT

RATIONALE FOR PERMIT CONDITIONS AND EFFLUENT LIMITS

YUCATAN ELECTRIC
AZTEC, CORONADO
PERMIT NO. CA0000001

I. DESCRIPTION OF FACILITY

A. Background

The Yucatan Electric Aztec Works began operations in 1957 on a 340 acre site in Aztec, Coronado. The plant currently employs around 4000 people and produces telephone and telegraph apparatus, including switching gear, and insulated non-ferrous wire and cable.

Two wastewater discharges result from the Aztec operations, one to Inca Creek and the other to West Montezuma Creek. The West Montezuma Creek discharge consists of relatively low contamination water such as boiler blowdown and cooling tower blowdown. The Inca Creek discharge consists of process waste after treatment in a physical - chemical waste treatment plant. Both discharges are governed by a Coronado NPDES permit (CA0000001).

The Aztec Works operates solely for the Drum System. Production is divided between two buildings, the "Cable Building" and the "Apparatus Building". The "Cable Building" houses tin plating and wire coating operations. The wastes resulting from the tinning operation include cleaning wastes, some plating rinse waters, and waste collected in floor drains. The cleaning wastes are pumped to the acid-alkali tank at the waste treatment plant. The rinse waters and floor drainage are pumped to the miscellaneous waste tank before treatment.

Wire coating involves the application of polyethylene, polypropylene, and/or PVC coatings to copper wire or plated wire using an extrusion process. Certain insulating and weatherproofing sheaths

are also applied to cables in this area. The water used to cool the cables after coating is part of the cooling water system and is recirculated back into the system; there is no discharge.

The "Apparatus Building" houses the apparatus operations (assembly of switch gear, connectors, etc.), sheet metal fabrication, central storage and maintenance, and various plating operations (gold, zinc, chrome, copper, nickel, solder). The majority of the apparatus operations are dry, but a small amount of recirculated cooling water may be used in plastic molding work. Metal cabinets and various other metal pieces are fabricated in the Apparatus Building. The only discharge from metal fabrication is an alkali rinse of the finished parts which is routed to the acid-alkali tank at the waste treatment plant.

The plating operations in the "Apparatus Building" generate the majority of the wastewater handled at the Aztec Works. Each of the plating operations results in two waste streams, a cleaning rinse and a plating rinse. Gold is deposited on connectors using a cyanide bath in the Precious Metal Plater. An acid cleaning rinse and cyanide plating rinse result from the Precious Metal plating. A Square Wire Plater deposits copper and solder on wire resulting in an alkaline waste stream. Chrome, nickel and zinc automatic platers and barrel platers are used for plating a variety of metal parts. The waste streams from each of these operations are sent to the appropriate section of the waste treatment system. Waste from a chromate coating facility is pumped to the chrome treatment system.

A drum storage area and receiving dock are located in the "Apparatus Building". Drums of hazardous wastes, such as spent plating solutions, are stored in an enclosed area along with empty drums and scrap metal, awaiting shipment. Chemicals, plastics, and miscellaneous items are received and stored in the "Apparatus Building". According to Company personnel all unplugged floor drains in the building drain to the waste treatment plant.

B. Waste Treatment

Wastewaters from the Aztec Works are segregated into six streams: chrome wastes, cyanide wastes, acid alkali wastes, floor drain wastes, miscellaneous wastes (including tin plating wastes), and noncontact wastes. All but the noncontact wastes are treated in a physical chemical treatment plant and are discharged through Outfall 001. The "noncontact waters" are discharged through Outfall 002.

1. Outfall 001-Inca Creek Discharge

Outfall 001, to Inca Creek, handles the effluent from the 450 gpm treatment plant. The waste is segregated into five streams each receiving a particular treatment [Figure 1] before being combined in a flume prior to solids removal [Figure 2].

a. Miscellaneous Wastes Tank

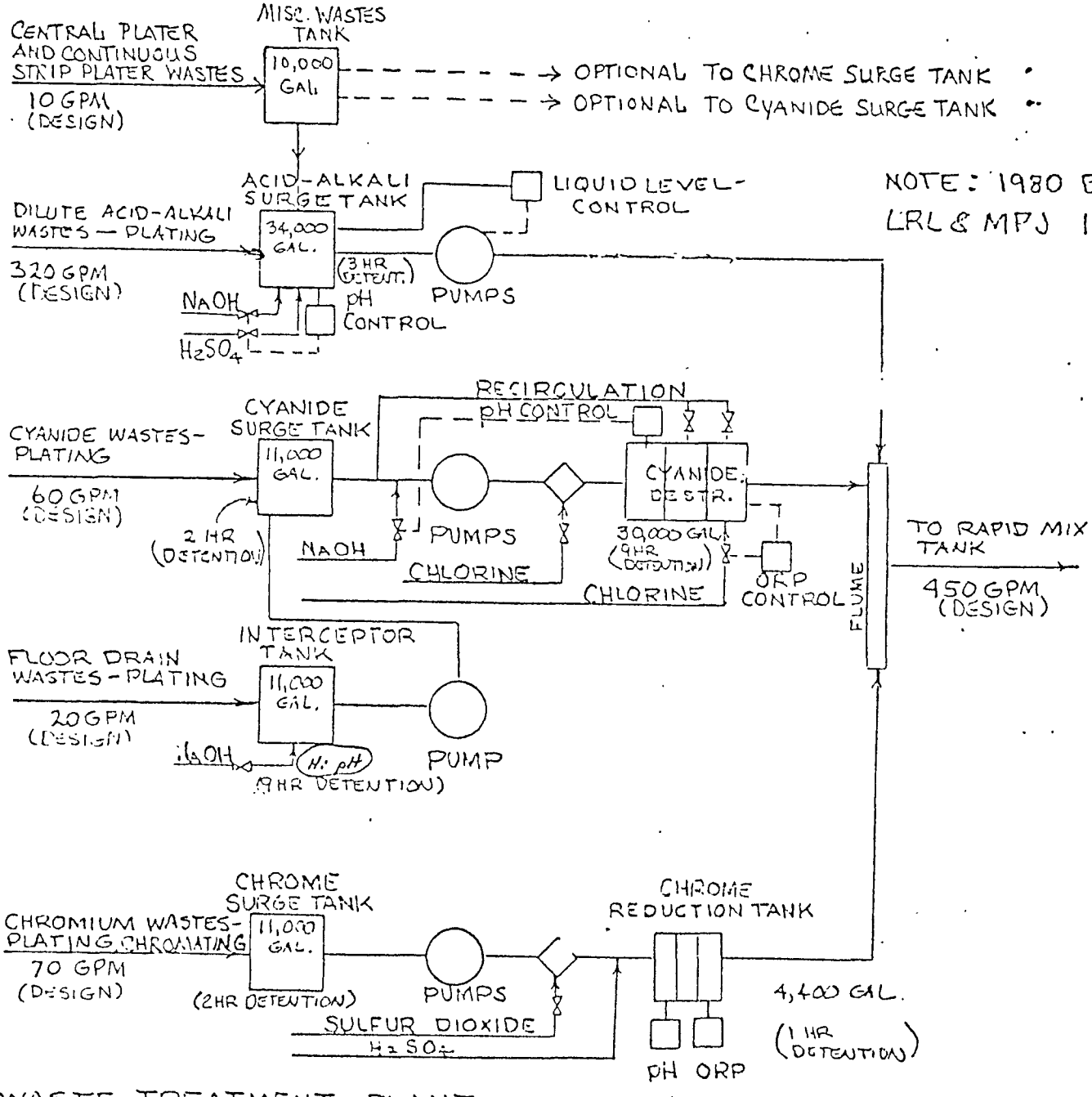
Wastes from the Central Tin Plater and Strip Plater in the Cable Building are collected in the miscellaneous waste tank. From here depending on the nature of the waste, it can be routed to the chrome or cyanide system for treatment.

b. Acid-Alkali Surge Tank

Dilute acid-alkali plating wastes and metered amounts of spent strong acids are collected in the acid-alkali surge tank. The pH is adjusted to 5-6 by automatic feed of lime slurry (NaOH) or sulfuric acid (H_2SO_4). The waste is pumped from this tank to a flume preceeding the solids removal system.

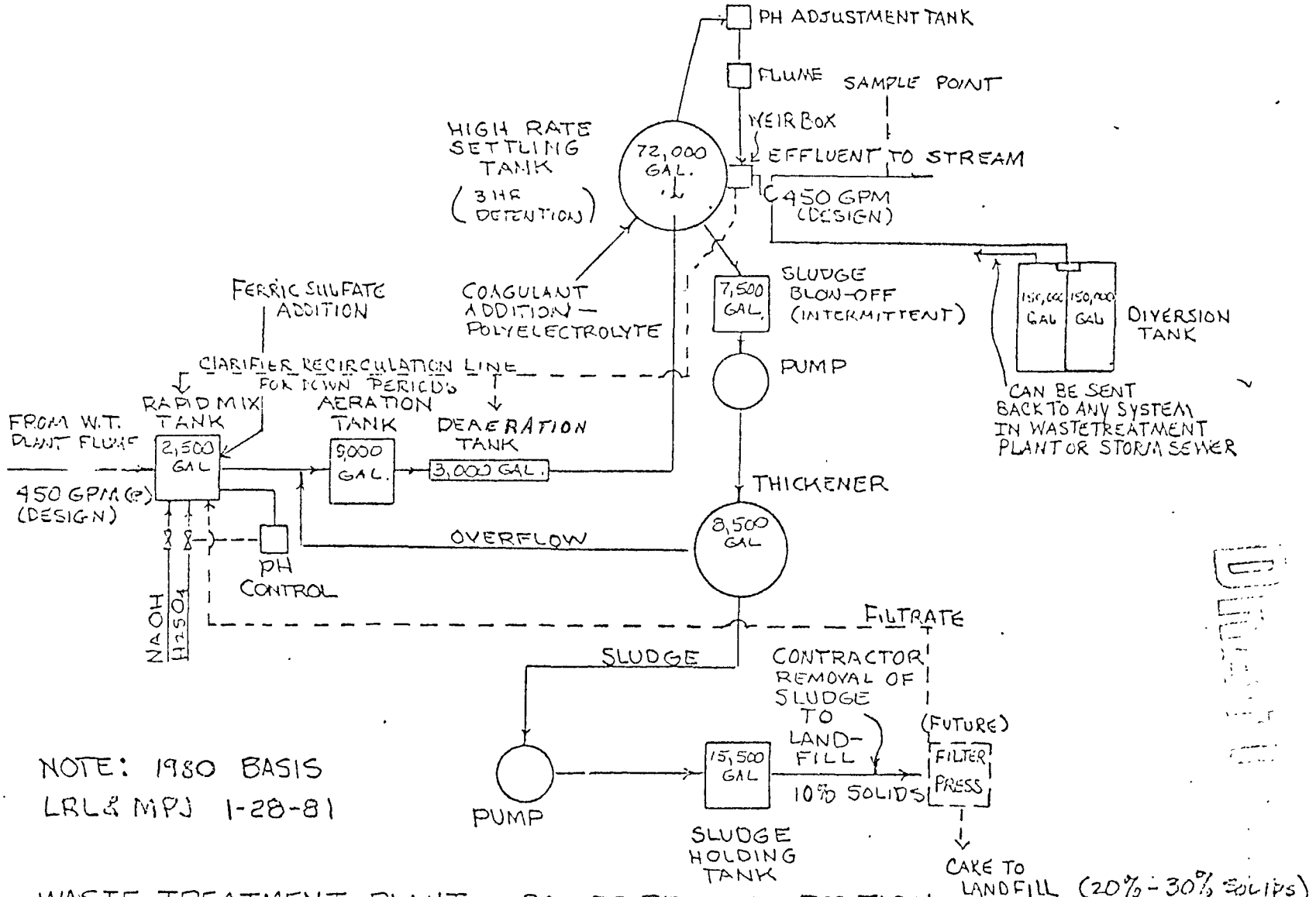
c. Cyanide Surge Tank

Alkaline rinse waters, with cyanide contamination, are collected in the cyanide surge tank. As the waste leaves the tank NaOH is added to maintain the pH at about 10, and chlorine



WASTE TREATMENT PLANT — OXIDATION, REDUCTION, NEUTRALIZATION PORTION

FIGURE 1.



NOTE: 1980 BASIS
LRL & MPJ 1-28-81

WASTE TREATMENT PLANT — SOLIDS REMOVAL PORTION

FIGURE 2

gas is injected to oxidize the cyanide. The waste is pumped to a cyanide destruction tank where more chlorine can be added, if necessary to oxidize remaining cyanide. The treated waste combines with the acid alkali stream in the flume preceeding solids removal.

d. Interceptor Tank

Strong alkali waste and waste collected in the floor drains of the plating room combine in the interceptor tank. NaOH is automatically fed to this tank to maintain a pH of 9. The waste is sampled to determine the contaminants (chromium or cyanide). If only one contaminant is present the waste is sent to the appropriate system. If more than one contaminant is present, batch treatment for specific contaminants is used in the tank before the waste is delivered to the solids removal flume.

e. Chrome Surge Tank

Chrome wastes from the plating room are collected in the chrome surge tank before passing through a sulfonator, where SO_2 is injected to reduce the chrome from the hexavalent to the trivalent state. The waste is held in a chrome reduction tank for 1 hour before combining with the other wastes in the solids removal flume.

f. Solids Removal System

Treated acid-alkali, cyanide, chrome, and miscellaneous wastes combine in a flume which flows into a Rapid Mix Tank (Figure 2). Lime slurry or sulfuric acid are added to the Rapid Mix Tank to adjust the pH to about 8.5, and ferric sulfate is added to aid in precipitation.

From the Rapid Mix Tank the neutralized wastes pass through an Aeration Tank where ferrous iron is oxidized to ferric iron for improved settling. The waste then flows through a trough or Deaeration Tank into a High Rate Settling Unit

In this unit a polyelectrolyte is added to aid settling and sludge is removed from the bottom while clean water flows out the top. The effluent flows through a pH adjustment tank and out to Inca Creek (Outfall 001). Two 150,000 gallon diversion tanks can be used in the case of an upset.

2. Outfall 002-Montezuma Creek Discharge

All "noncontact waters", consisting primarily of cooling tower and boiler blowdowns, are discharged through Outfall 002. This waste stream receives no treatment other than neutralization of the boiler blowdown.

C. Water Quality Standards

Inca Creek and West Montezuma Creek are both classified for agriculture use, industrial use, partial body contact sports, and growth and propagation of fish, waterfowl, wildlife and other aquatic and semi-aquatic life.

II. RATIONALE FOR EFFLUENT LIMITS

The Clean Water Act (CWA) specifies that industrial waste dischargers are to achieve effluent limitations based on regulations promulgated by EPA. The effluent limitations are to be established using proven treatment technology. Initially dischargers were to meet effluent limits requiring Best Practicable Control Technology Currently Available (BPT) by July 1, 1977. The CWA (amended in 1977) required that dischargers obtain effluent quality equivalent to the Best Available Technology Economically Achievable (BAT) by July 1, 1984. BAT effluent limits apply to toxic pollutants as well as conventional pollutants, (BOD, TSS, pH, oil and grease, and fecal coliform) and non-conventional pollutants.

EPA has not promulgated BPT or BAT guidelines for the Metal Finishing (electropolating) industry. The "Development Document for Metal Finishing", promulgated in June 1980, presents treatment options for

each subcategory within the Metal Finishing industry, but does not establish BPT or BAT effluent limits. Specific limitations are expected to be proposed in the summer of 1981. The Yucatan Electric, Aztec Works are included in the common metals, cyanide, hexavalent chromium, and oils and organics subcategories.

The Development Document presents treatment options for each subcategory. The Effluent Guidelines staff anticipates that Treatment Option 1, for the common metals and oils and organics subcategories, will represent BPT, and Option 2 will represent BAT. Option 2 consists of Option 1, precipitation and sedimentation, followed by filtration. The Consolidated Permit Regulations (40 CFR Part 122) provide that in the absence of effluent guidelines, permit conditions may be established using Best Professional Judgment (BPJ) [40 CFR 122.62(a)]. Using BPJ procedures the permit writer may use a variety of technical information available to him. Discharge limitations proposed in this permit are established using BPJ procedures and are based on the 1980 Development Document.

A. Outfall 001-Inca Creek

1. Location

Sampling of this outfall shall be performed at a point following the wastewater treatment plant and prior to discharge to Inca Creek.

2. Waste Streams

The wastes in this discharge, as reported in the application, consist of:

a. 114,200 gpd electroplating wastes from zinc, nickel, chromium, copper, solder, gold, tin, and anodizing plating operations.

TABLE I

OUTFALL 001
FINAL EFFLUENT LIMITATIONS

PARAMETER	30-day AVERAGE		DAILY MAXIMUM	
	(mg/l)	(lbs/day)	(mg/l)	(lbs/day)
Cyanide, Total	0.56	1.07	1.85	3.55
Copper	0.48	0.92	1.80	3.45
Chromium	0.45	0.86	1.24	2.38
Hexavalent Chromium	0.05	0.10	0.17	0.33
Nickel	0.72	1.38	1.60	3.07
Zinc	0.32	0.61	0.74	1.42
Lead	0.04	0.08	0.10	0.19
Cadmium	0.02	0.03	0.03	0.06
Iron	0.33	0.63	0.75	1.44
Fluoride	6.19	11.9	13.8	26.5
Residual Chlorine	0.01	0.02	0.10	0.20
TSS	16.5	31.7	36.8	70.6
Oil and Grease	9.2	17.7	20.6	39.5
Phenols	0.10	0.20	0.60	1.15

b. 38,500 gpd from cleaning, chromating, and phosphating for powder finishing.

c. 72,000 gpd miscellaneous wastes from the Apparatus Building including cooling water, leaks, drinking fountains, etc.

d. 1,000,000 gpd storm water (maximum)

3. Basis for Effluent Limits

a. Background

Interim and Final effluent limitations for Outfall 001 are based on the treatment levels presented in the June 1980 Development Document for the Metal Finishing industry. Option 1 treatment is considered to be BPT level treatment and Option 2 is used as BAT level treatment. Limitations for metals, TSS, fluoride, oils and toxic organics are discussed below.

b. Metals and TSS

The effluent limitations proposed in the permit for metals and TSS (Table I) are based on the treatment levels presented for Option 2 in the Development Document. Cyanide limits are based on chlorine oxidation treatment, and chromium limits are based on chemical reduction as discussed in the Development Document.

Concentration limits presented in the guideline document, and an average flow of 0.23 MGD were used to establish mass loadings for outfall 001. Effluent data for 1979-1980 indicates that the Aztec Works can meet the proposed limits for metals with present operating procedures, therefore the interim limits are equivalent to the final limits.

c. Fluoride

Yucatan Electric uses fluoroborate plating solutions in several of the plating operations resulting in fluorides in the discharge. The proposed permit establishes final average and maximum fluoride limitations of 6.19 mg/l and 13.8 mg/l, respectively (Table I). These limitations are based on treatability levels established under treatment Option 2 for the Common Metals subcategory in the 1980 Development Document.

Data presented in the Yucatan Electric NPDES permit application shows fluoride concentrations of 12.8 mg/l in Outfall 001. Additional testing performed in March 1981 showed a fluoride concentration of 11.5 mg/l. These concentrations, although below the proposed maximum of 13.8 mg/l, suggest that the average discharge of fluoride is above the proposed average limitation of 6.19 mg/l. The permit requires additional monitoring to supplement the available data which consists of only two samples. Interim limits of 19.9 mg/l-average, and 44.4 mg/l-maximum were established based on Option 1 treatment which represents BPT. Time is allowed to evaluate the fluoride discharge and institute appropriate treatment if necessary.

It may be necessary to add treatment to precipitate out the fluoride. This treatment may be accomplished in the waste treatment plant or on the individual fluoride process streams before they mix in the solids removal flume.

d. Oils & Toxic Organics

Oily wastes and toxic organics include process coolants, lubricants, and cleaning wastes. The proposed concentration limits are based on levels established in the Oils subcategory for Common Metals combined wastewater. Both Option 1 and Option 2 treatment systems are considered.

(1) Oil and Grease

The Option 2 treatment level was used to establish the oil and grease limitation proposed in the permit (Table I). Data presented in the NPDES application shows 4.0 mg/l oil and grease in the 001 discharge, well within the proposed average of 9.2 mg/l.

(2) Total Toxic Organics (TTO)

The Metal Finishing Development Document identifies 95 toxic organic pollutants of concern in the Common Metals subcategory. Of these 95, the 5 listed below were reported at detectable levels in the permit application for the effluent from Yucatan Electric's treatment plant (Outfall 001). However, an additional sample collected in March 1981 showed no detectable (ND) quantity of any parameter but phenols.

	Application (mg/l)	March (mg/l)*
phenols	0.275	<0.1
1,1,1-trichloroethane	0.027	ND
1,2-trans-dichloroethylene	0.044	ND
methylene chloride	0.012	ND
trichloroethylene	0.007	ND
TTO	0.365	<0.1

EGD indicates that final effluent guidelines for the Metal Finishing industry will establish target concentrations for Total Toxic Organics (TTO) around 0.01 mg/l average concentration and 0.60 mg/l maximum concentration. The intent is to use these concentrations as target levels and not to establish effluent limits.

*Detection limit for phenols is 0.1 mg/l. Detection limit for all other parameters was 1 ug/l.

Yucatan Electric's data show that the TTO in the effluent are below the daily maximum, but exceed the target average concentration. Phenols are the major component of the toxic organics found, and recent efforts by the company to locate the source of these have failed.

The permit requires monthly monitoring for phenols for the first 6 months, and quarterly monitoring thereafter. If the data indicate that the discharge of phenols averages less than 0.01 mg/l, no action is required. However, if the data show phenol discharges greater than 0.01 mg/l average, the company is required to take steps to identify the source of the phenols and reduce the amount being discharged.

Final effluent limits for phenols are set at 0.10 mg/l for the average and 0.60 mg/l for the daily maximum. There are no interim limits.

Monitoring for Total Toxic Organics is required once a year. This analysis shall include all parameters listed in Part V-C of the NPDES permit application under the GC/MS fractions for Volatile, Acid, and Base/Neutral compounds. This monitoring will serve as an indication that the company is maintaining control of their toxics discharges. There are no effluent limitations for TTO.

e. Hazardous Substances

The Clean Water Act, Section 311, requires that EPA develop a list of substances which when discharged are hazardous to the public health or welfare. EPA promulgated the list of hazardous substances, 40 CFR 116, and established reportable quantities and notification

requirements for each substance, 40 CFR 117. The regulations require that if a hazardous substance is discharged in amounts greater than the reportable quantity the government shall be notified. An exemption from Section 311 requirements can be granted if the substance, amount and origin of the discharge are documented in the public record of the NPDES permit, and the substance is subject to a condition in the permit.

Yucatan Electric, in the NPDES application, listed 22 Hazardous Substances for which they are requesting an exemption from section 311 requirements. Table II lists each substance, the amount used, the reportable quantity under 40 CFR 117, and the origin and source of each. Chlorine, sodium cyanide, and sulfuric acid are the only substances used in quantities greater than the reportable quantities.

To grant a 311 exemption of these hazardous substances it is necessary to establish a permit condition governing their discharge. In this case certain permit parameters are used as indicators of the presence of the substance in the discharge (Outfall 001).

The last column of Table II lists the indicator permit parameter for each substance. Metals or pH are used as indicators for all substances but chlorine.

Chlorine is the only hazardous substance for which specific monitoring is required. The residual chlorine limitation of 0.01 mg/l in Outfall 001 is based on Water Quality Criteria published by EPA.

TABLE II
HAZARDOUS SUBSTANCES
311 EXEMPTIONS

SUBSTANCE	AMOUNT PER DAY (lbs)	REPORTABLE QUANTITY (lbs)	ORIGIN AND SOURCE	INDICATOR
Aluminum Sulfate	50	5,000	Used as a coagulant in the waste treatment plant	pH
Calcium Hypochlorite	2,000	100	Used as a cyanide oxidizer in the waste treatment plant	Cl
Chlorine	700	10	Used as a cyanide oxidizer in the waste treatment plant	Cl
Chromic Acid	30	1,000	Used in chrome plating and chromating operations	pH
Cupric Sulfate	25	100	Copper Plating of square wire	pH
Ferric Sulfate	50	1,000	Used as a flocculant in the waste treatment plant	Fe
Ferrous Sulfate	5	1,000	Used as a flocculant in the waste treatment plant	Fe
Hydrochloric Acid	475	5,000	Acid dipping and pickling operations in electroplating, nickel plating	pH, F
Hydrofluoric Acid	4	5,000	Chrome plating and pickling operations	pH, F
Lead Fluoborate	45	5,000	Solder plating operations	Pb
Nickel Chloride	3	5,000	Nickel plating operations	Ni
Nickel Sulfate	7	5,000	Nickel plating operations	Ni
Nitric Acid	80	1,000	Bright dipping and stripping operations in electroplating	pH
Phosphoric Acid	2	5,000	Acid dipping in phosphating operations	pH
Sodium Bichromate	77	1,000	Chrome plating, chromating, and passivation operations	Cr
Sodium Cyanide	25	10	Zinc, copper, and gold plating operations	CN

TABLE II (Cont.)
HAZARDOUS SUBSTANCES
311 EXEMPTIONS

SUBSTANCE	AMOUNT PER DAY	REPORTABLE QUANTITY	ORIGIN AND SOURCE	INDICATOR
	(lbs)	(lbs)		
Sodium Hydroxide	635	1,000	Alkali cleaning and neutralization in electroplating; neutralization in waste treatment plant, zinc plating	pH
Sodium Phosphate (Tribasic)	<1	5,000	Phosphating Operations	pH
Strontium Chromate	<1	1,000	Chrome Plating-Catalyst	Cr
Sulfuric Acid	1,700	1,000	Used for neutralization at waste treatment plant and boiler blowdown, anodizing, chrome plating, copper plating	pH
Zinc Carbonate	25	1,000	Zinc Plating - formed in the process	Zn
Zinc Cyanide	8	10	Zinc plating	Zn, Cn

B. Outfall 002-West Montezuma Creek

1. Location

Sampling of this outfall shall be performed at an existing manhole prior to discharge to West Montezuma Creek.

2. Waste Streams

The wastes in this discharge, as reported in the application, consist of:

a. 154,700 gpd cooling tower recirculating system blowdown

b. 60,000 gpd boiler blowdown

c. 57,000 gpd miscellaneous wastes from the Cable Building including cooling water, leaks, drinking fountains, etc.

d. 1,000,000 gpd stormwater (maximum)

3. Basis for Effluent Limits

The effluent limitations for Outfall 002 (Table III) are based on information reported in the application, and the June 1980 Development Document for Metal Finishers as discussed for Outfall 001. The mass loadings are based on an average flow of 0.26 MGD.

a. Metals

The proposed permit establishes discharge limitations and monitoring requirements for 4 toxic metals; copper, chromium, nickel, and zinc. Monitoring of these parameters is required to ensure that no contaminants enter the discharge through the cooling water, spills, leaks, plant upsets, etc.

b. Fluoride

Fluoroborate plating solutions are used in several operations, and fluoride monitoring is required to detect if any solution is carried over into the cooling water. Also, a fluoroborate solution is used in the Central Tin Plater, located in the Cable Building, and monitoring will detect if any spills, or leaks from this operation enter the floor drainage to Outfall 002.

c. Oils and Toxic Organics

(1) Oil and Grease

Oil and grease limitations are based on information presented in the Development Document. Application data indicates that the discharge from 002, 3.3 mg/l, is within the proposed average limitation of 9.2 mg/l.

(2) Total Toxic Organics (TTO)

Yucatan Electric in the permit application reported the following 4 toxic organics present in detectable quantities in Outfall 002. However, only phenols were detected in the March 1981 sampling.

	Application (mg/l)	March (mg/l)
phenols	0.360	<0.1
1,1,1-trichloroethane	0.006	ND
1,1-dichloroethane	0.004	ND
methylene chloride	0.012	ND
TTO	0.382	<0.1

The monitoring requirements for toxic organics at Outfall 002 are the same as those for Outfall 001. Monthly monitoring for phenols is required for 6

months, after which the frequency is decreased to quarterly. The monitoring data will be used to evaluate the need for further investigation of the phenols in the discharge. Final limits of 0.10 mg/l and 0.60 mg/l are to be effective in July, 1984. Total Toxic Organic monitoring is required on a yearly basis.

d. pH

YucatanElectric has experienced problems in maintaining a pH below 9 in this discharge because of high pH of the water supplied to them by the Metropolitan Utilities District (MUD). To account for this the permit requires monitoring of the influent and the maximum pH limit is adjusted to this value.

III. MONITORING REQUIREMENTS

Yucatan Electric currently is required to monitor monthly, however; because of the variability possible in the processes it was decided that more frequent monitoring is needed. Weekly monitoring is required for metals, TSS, Oil and Grease and Fluorides to give a better indication of plant upsets and variations in effluent quality.

Monitoring for specific phenols and fluorides is required once a month for 6 months in order to establish a data base. After 6 months an evaluation shall be made as to the need for continued monitoring and/or additional treatment. Quarterly monitoring is required after the first 6 months for phenols and fluorides, and yearly monitoring is required for TTO.

TABLE III

OUTFALL 002

FINAL EFFLUENT LIMITATIONS

PARAMETER	30-day AVERAGE		DAILY MAXIMUM	
	(mg/l)	(lbs/day)	(mg/l)	(lbs/day)
Cyanide, Total	0.56	1.21	1.85	4.0
Copper	0.48	1.04	1.80	3.9
Chromium	0.45	0.98	1.24	2.7
Nickel	0.72	1.56	1.60	3.5
Zinc	0.32	0.69	0.74	1.6
Fluoride	6.19	13.4	13.8	29.9
Oils	9.2	20.0	20.6	44.7
Phenols	0.10	0.22	0.60	1.3

SAMPLE STATE PERMIT

IOWA DEPARTMENT OF ENVIRONMENTAL QUALITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

OPERATION PERMIT
TO DISCHARGE INTO THE WATERS OF DUNE

PERMITTEE
Universe Company
Post Office Box 819
Caladan, Dune

IDENTITY AND LOCATION OF FACILITY
Universe Company
Facility No. 23-26
Arrakan, Dune

DUNE NPDES PERMIT NUMBER
23-26-1-12

RECEIVING WATERCOURSE
Usul Creek and the Uncompahgre River

DATE OF ISSUANCE

DATE OF EXPIRATION

You are required to file for renewal of this permit by

This permit is issued pursuant to the authority of section 402(b) of the Clean Water Act (33 U.S.C. 1342(b)), section 455B.33, Code of Dune 1977, and rule 400--19.3, Dune Administrative Code. You are authorized to operate the disposal system and to discharge the pollutants specified in this permit in accordance with the effluent limitations, monitoring requirements and other terms set forth in this permit.

You may appeal any conditions of this permit by filing a written notice of appeal and request for administrative hearing with the executive director of this department within 30 days of your receipt of this permit. (See section 455B.33(4), Code of Dune 1977 and rules 400--24.12(4) and (5), Dune Administrative Code.)

Any existing, unexpired Dune operation permit or Dune NPDES permit previously issued by the Dune Department of Environmental Quality for the facility identified above is revoked by the issuance of this Dune NPDES operation permit.

OUTFALL SERIAL NO.	DESCRIPTION
001	Outfall from the final polishing pond receiving treated process wastewaters from a completely mixed activated sludge plant and settled stormwater runoff.
002	Stormwater discharge at the "large pellet pond" on the east side of the plant by the rail scales.
003	Stormwater discharge at the "small pellet pond" on the east side of the plant near the polyethylene loading area.
004	The storm water discharge pipe from the "southwest drainage ponds" north of the large ethylene storage tank.
005	The storm water discharge pipe from the "flare drainage pond" west of the flare area.

GENERAL CONDITIONS

1. ADMINISTRATIVE RULES

Rules of this department which govern your facility operation in connection with this permit are published in part 400 of the Dune Administrative Code in the following chapters, which are attached to this permit and made a part of this permit.

Chapter 15, Definitions (as used in Chapters 16 through 19).

Chapter 17, Effluent and Pretreatment Standards; Other Effluent Limitations or Prohibitions.

Chapter 18, Monitoring, Analytical and Reporting Requirements.

Chapter 19, Waste Water Construction and Operation Permits.

Reference to the term "rule" is this permit means the designated provision of Part 400, Dune Administrative Code.

2. NOTICE OF CHANGED CONDITIONS

You are required to report any changes in existing conditions or information on which this permit is based.

(a) Facility expansions, production increases or process modifications which may result in new or increased discharges of pollutants must be reported to the executive director in advance. If such discharges would violate your effluent limitations, your report must include a new application for NPDES permit. (See rule 19.5(5)"a".)

(b) If any modification of, addition to, or construction of a disposal system is to be made, you must first obtain a written permit from this departmen in accordance with rule 19.2.

(c) If your facility is a publicly owned treatment works or otherwise may accept waste for treatment from commercial or industrial constributors, see Appendix C for further notice requirements.

3. PERMIT MODIFICATION, SUSPENSION OR REVOCATION

(a) This permit may be modified, suspended or revoked for causes specified in rule 19.3(11).

(b) This permit may be modified due to changed conditions or information on which this permit is based.

(c) If a toxic pollutant is present in your discharge and more stringent standards for toxic pollutants are established under section 307(a) of the Clean Water Act, this permit will be modified in accordance with the new standards. (See rule 19.6(5)"g".)

4. INSPECTION OF PREMISES, RECORDS, EQUIPMENT, METHODS AND DISCHARGES

You are required to permit authorized department personnel to inspect in accordance with rule 19.6(5)"c".

5. OPERATION AND MAINTENANCE

All facilities and control systems shall be operated as efficiently as possible and maintained in good working order, in accordance with rule 19.6(5)"f", and a sufficient number of staff, adequately trained and knowledgeable in the operation of your facility shall be retained to achieve compliance with the terms of this permit.

6. MAINTENANCE OF RECORDS

You are required to maintain records of your operation in accordance with rule 18.9.

7. TRANSFER OF TITLE

If title to your facility or any part of it is transferred, the new owner shall be subject to this permit. You are required to notify the new owner of the requirements of this permit in writing prior to such transfer of title. The executive director of this department shall be notified in writing of such transfer within 30 days. (See rule 19.13.)

8. SEVERABILITY

The provisions of this permit are severable, and if any provision or application of any provision to any circumstances, is found to be invalid by this department or a court of law, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected by such finding.

9. APPLICATION OF OTHER AUTHORITY

This permit does not relieve you of the responsibility to comply with all local, state and federal laws, ordinances, regulations or other legal requirements applying to the operation of your facility.

SPECIAL CONDITIONS

The attached appendices specify further conditions which govern the operation of your facility:

[x] Appendix A - Effluent Limitations

[x] Appendix B - Monitoring and Reporting Requirements

Appendix C - Conditions, Limitations and Monitoring Requirements for Contributing Commercial/Industrial Users

[x] Appendix D - Schedule of Compliance

[x] Appendix E - Other Requirements

[x] Appendix F - Best Management Practices

FOR THE DEPARTMENT OF ENVIRONMENTAL QUALITY

DISTRIBUTION
1 - Permittee
1 - EPA, Region VII
1 - CWQ, Wastewater Operations
1 - Records Center
1 - RO#6 Washington, IA

NPDES Permit Number

INTERIM

APPENDIX A - Effluent Limitations for Outfall 001 for the period beginning on the effective date of this permit and lasting through June 30, 1984.

You are prohibited from discharging pollutants more frequently or in excess of the limitations specified below:

OUTFALL SERIAL NUMBER	WASTEWATER PARAMETER	MASS IN POUNDS PER DAY (unless otherwise specified) Average	Maximum	CONCENTRATION IN mg/l (unless otherwise specified) Average	Maximum
001	Flow (MGD)	2.14	3.67	--	--
	BOD (5-day)	355	710	20	40
	TSS	490	840	27	47
	Oil and Grease	180	360	10	20
	COD	2500	5000	140	280
	Benzene	1.8	3.6	0.10	0.20
	Total Cr.	0.9	1.8	0.05	0.10
	Zn	1.8	3.6	0.10	0.20
	Phenols	1.8	8.9	0.10	0.50
	(Standard pH Units)	Minimum 6.0 and Maximum 9.0			

DEFINITIONS

1. "Maximum" means the total discharge by mass, volume or concentration which cannot be exceeded during a twenty-four hour period.

2. "Average" means the sum of the total daily discharges by mass, volume or concentration during the reporting period divided by the total number of days during the reporting period when the facility was in operation, and is to be calculated in connection with your monitoring requirements by totaling all measured daily discharges by mass, volume or concentration and dividing by the number of days during the reporting period when the measurements were made.

APPENDIX A - Effluent limitations for Outfall 001 for the period beginning July 1, 1 and ending on the expiration date of the permit.

You are prohibited from discharging pollutants more frequently or in excess of the limitations specified below:

OUTFALL SERIAL NUMBER	WASTEWATER PARAMETER	MASS IN POUNDS PER DAY (unless otherwise specified) Average	Maximum	CONCENTRATION IN mg/l (unless otherwise specified) Average	Maximum
	Flow (MGD)	2.14	3.67		
	BOD (5-day)	355	710	20	40
	TSS	355	710	20	40
	Oil & Grease	180	360	10	20
	COD	1600	3200	90	180
	Benzene*	0.9	1.8	0.05	0.10
	Total Cr.	0.9	1.8	0.05	0.10
	Zn	1.8	3.6	0.1	0.2
	Phenols	0.9	1.8	0.05	0.10
	Anthracene*	0.9	1.8	0.05	0.10
	Copper*	0.9	1.8	0.05	0.10
	Flourene*	0.9	1.8	0.05	0.10
	Phenanthrene*	0.9	1.8	0.05	0.10
	Pyrene*	0.9	1.8	0.05	0.10
	pH (Standard Units)	Minimum 6.0 and Maximum 9.0			

DEFINITIONS

1. "Maximum" means the total discharge by mass, volume or concentration which cannot be exceeded during a twenty-four hour period.

2. "Average" means the sum of the total daily discharges by mass, volume or concentration during the reporting period divided by the total number of days during the reporting period when the facility was in operation, and is to be calculated in connection with your monitoring requirements by totaling all measured daily discharges by mass, volume or concentration and dividing by the number of days during the reporting period when the measurements were made.

* Effluent limits for these parameters to be reevaluated after the initial 1-year monitoring program.

NPDES Permit

APPENDIX B - Monitoring and Reporting Requirements

(a) Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

(b) "Standard Methods", as defined in rule 15.1(30), "EPA Methods", as defined in rule 15.1(10), "ATSM", as defined in rule 15.1(3), or other analytical and sampling methods as specified in Table 1 of Chapter 18 of the rules, or other methods approved in writing by the Department, shall be utilized.

(c) Table III of Chapter 18 of the rules provides you with further explanation of your monitoring requirements.

(d) You are required to monitor your wastewater as specified below. Results of all monitoring shall be recorded on forms provided by the Department, and submitted to the Department by the fifteenth day following the close of the reporting period. Your reporting period is on a monthly basis, ending on the last day of each month.

(1) OUTFALL 001

WASTEWATER PARAMETER	FREQUENCY	SAMPLE TYPE	SAMPLING REQUIREMENTS**
Flow	Continuous	Totalizer	1.
BOD (5 day)	3/week	24 hr. composite	1.
TSS	3/week	24 hr. composite	1.
Oil & Grease	3/week	Grab	1.
pH	Daily	Grab	1.
COD	3/week	24 hr. composite	1.
Benzene	1/week	Grab	1.
Total Cr.	1/week	Grab	1.
Zn	1/week	Grab	1.
Phenols	1/week	Grab	1.
Anthracene*	1/mo	Grab	1.
Copper*	1/mo	Grab	1.
Fluorene*	1/mo	Grab	1.
Phenanthrene*	1/mo	Grab	1.
Pyrene*	1/mo	Grab	1.

*Monitoring requirements for these parameters to be evaluated after the initial 6 months of monitoring.

**Samples collected as specified in the sampling requirements shall be taken at the following location:

1. - final effluent from polishing pond.

(2) OPERATIONAL MONITORING

WASTEWATER PARAMETER	FREQUENCY	SAMPLE TYPE	SAMPLING REQUIREMENTS*
Flow	Daily	Total	2, 5, 6
BOD_5	2/week	24 hr. composite	2, 10
COD	3/week	24 hr. composite	2, 3, 10
TSS	2/week	24 hr. composite	2, 3, 10
Mixed Liquour Suspended Solids	4/week	Grab	4, 5
Mixed Liquour Volatile Suspended Solids	2/week	Grab	4
Phenol	5/week	Grab	3, 10
pH	5/week	Grab	2, 3
pH	2/week	Grab	4, 9
Temperature	5/week	Grab	4, 9
Dissolved Oxygen	4/week	Grab	4, 9
% Solids	1/week	Grab	9
Hexavalent Cr.	5/week	Grab	2, 7, 8
Total Cr.	2/week	Grab	7, 8
Zinc	5/week	Grab	7, 8
Total Nitrogen	1/week	Grab	4

*Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

2. Influent to the equalization tank
3. Influent to the aeration basin
4. Aeration basin contents
5. Return activated sludge
6. Waste activated sludge
7. Cooling tower blowdown before the chrome treatment system
8. Cooling tower blowdown after the chrome treatment system
9. Digester contents
10. Final clarifier effluent

APPENDIX C - SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations, monitoring requirements and other stipulations in accordance with the following implementation schedule:

When used below, "required facilities" means those facilities provided by the permittee which will achieve compliance with limitations based upon "Best Conventional Pollutant Control Technology "(BCT) for conventional pollutants or "Best Available Technology Economically Achievable" (BAT) for toxic substances as indicated.

(a) by July 1, 1982, the permittee shall submit to the Dune Department of Environmental Quality (DEQ) a preliminary engineering report for the construction of the required BCT facilities.

(b) by April 1, 1982, the permittee shall submit to the Dune DEQ a report on the priority pollutant monitoring and need for required BAT facilities as specified in Appendix E, Other Requirements of this permit.

(c) by August 1, 1982, the permittee shall submit to the Dune DEQ a preliminary engineering report for the construction of the required BAT facilities.*

(d) by April 1, 1983, the permittee shall submit to the Dune DEQ final plans and specifications for the construction of the required BCT and BAT* facilities.

(e) by July 1, 1984, the permittee shall complete construction of the required BCT and BAT* facilities, and by said date, shall submit to the Dune DEQ certification by a registered professional engineer that the construction thereof has been completed in accordance with the application, plans, specifications and permit therefor.

(f) the permittee shall submit to the Dune DEQ ninety (90) day progress reports stating the progress being made toward completion of the required facilities. The first such report shall be submitted on or before August 10, 1983.

*The need for required BAT facilities and associated subsequent implementation schedule steps will be determined by the Director following submission of the priority pollutant monitoring report about August 1, 1982.

NPDES PERMIT
APPENDIX E - OTHER REQUIREMENTS

SECTION A. STORMWATER MONITORING

Universe shall monitor stormwater discharges from the following locations [Figure 1]:

1. OUTFALL 002

   The overflow at the weir of the "large pellet pond" on the east side of the plant opposite the rail scales.

2. OUTFALL 003

   The overflow at the weir of the "small pellet pond" on the east side of the plant near the loading area.

3. OUTFALL 004

   The outlet pipe of the "southwest drainage ponds" located just north of the large ethylene storage tank.

4. OUTFALL 005

   The outlet pipe of the "flare drainage pond" located west of the flare area.

During the period beginning on the effective date of this permit and for one year following the effective date Outfalls 002, 003, 004, and 005 shall be monitored as specified below:

EFFLUENT CHARACTERISTICS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	total when discharging	estimate
Oil & Grease	1/day when discharging	grab
COD	1/day when discharging	grab
BOD	1/day when discharging	grab
pH	1/Day when discharging	grab

After one year, based on the results of this monitoring the Director may allow monitoring to be discontinued or may require additional monitoring and/or treatment of the discharge from Outfalls 002, 003, 004 and/or 005.

SECTION B. PRIORITY POLLUTANT MONITORING

1. Universe shall perform a complete priority pollutant analysis on the discharge from Outfall 001 within 3 months of the effective date of this permit and once every 2 years thereafter. The analysis shall include the toxic metals, cyanide, and total phenols, and the volatile, base/neutral and acid extractable fractions of the organic toxic pollutants contained in the gas chromatography/mass spectrometry analysis. A listing of the priority pollutants included in this requirement is contained in Part V of the Consolidated Permits Program Application Form 2C.

2. The results of each set of priority pollutant analysis shall be reported to the Director within 15 days of their availability to the permittee.

3. An evaluation of the initial complete priority pollutant analysis, the weekly monitoring data for benzene and the monthly monitoring data for anthracene, copper, fluorene, phenanthrene and pyrene shall be made by the permittee at the end of 6 months of monitoring. The permittee shall submit a report to the Director summarizing this evaluation and indicating what, if any, treatment improvements will be needed to meet final effluent limits for priority pollutants. The Director may then continue the monitoring requirements or modify the monitoring requirements and/or permit limits at his discretion.

SECTION C. GENERAL MONITORING AND REPORTING

1. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10% from true discharge rates throughout the range of expected discharge volumes.

2. By-passes shall be reported in accordance with rule 18.14.

DUNE PERMIT
APPENDIX F - BEST MANAGEMENT PRACTICES

SECTION A. GENERAL CONDITIONS

1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle or discharge any pollutant listed as toxic under Section 307(a)(1) of the Clean Water Act or any pollutant listed as hazardous under Section 311 of the Act and who have ancillary manufacturing operations which could result in significant amounts of these pollutants reaching waters of the United States. These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

2. BMP Plan

You shall develop and implement a Best Management Practices (BMP) plan which prevents, or minimizes the potential for, the release of toxic substances from ancillary activities to the waters of the United States through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

3. Implementation

The plan shall be developed within six months of the effective date of the permit and shall be implemented as soon as practicable but not later than one year after the effective date of the permit unless a later date is specified by the Director.

4. General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings or maps.

b. Establish specific objectives for the control of toxic and hazardous pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

[illegible] a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance.

c. Establish specific best management practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States.

d. Include any special conditions established in Part B of this section.

e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document" and shall include the following base line BMP's as a minimum:

a. BMP Committee
b. Reporting of BMP Incidents
c. Risk Idertification and Assessment
d. Employee Training
e. Inspections and Records
f. Preventive Maintenance
g. Good Housekeeping
h. Materials Compatibility
i. Security

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

You shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) (40 U.S.C. 6901 et. seq). Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Duty to Maintain

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available to the Director upon request.

9. BMP Plan Modification

You shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of hazardous or toxic pollutants.

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to surface waters and the specific objectives and requirements under paragraphs b and c of Section 4, the permit and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements.

SECTION B. SPECIFIC CONDITIONS

1. All process waste, and surface runoff from process areas subject to spills or leaks of raw materials or products containing toxic or hazardous materials, shall be contained and directed to the waste treatment plant or polishing pond.

2. Storage of wastewater treatment sludges, polishing pond dredgings and chrome treatment sludges shall be managed to minimize the potential for release of toxic or hazardous substances to navigable waters. Storage areas shall be graded to prevent run-on of surface runoff from adjacent areas and to prevent accumulation or ponding of precipitation in the storage areas. Management practices shall be designed to minimize infiltration of precipitation into sludge storage piles and to minimize leachate. Surface runoff and leachate from storage areas shall be conveyed to the final polishing pond through the existing storm drainage system. These management conditions are based upon the classification of stored sludges and dredgings as non-hazardous materials under applicable regulations for hazardous wastes (40 CFR Parts 260-265). Should any changes in the constituents of the materials being stored or in the definition of hazardous wastes result in the stored wastes or leachate from the storage piles meeting the definition of a hazardous waste, the Director shall be notified and the permittee shall make the necessary changes in management practices to comply with applicable state and Federal regulations for storage of hazardous wastes.

3. The existing "land farm" area for land disposal of wastewater treatment sludges located north of the sludge storage area shall be managed to minimize the potential for release of toxic or

hazardous substances to navigable waters. Surface runoff from adjacent areas shall be diverted around the disposal area. Surface runoff from the disposal area shall be conveyed to the storm drainage system tributary to the final polishing pond. Surface runoff from the disposal area shall not be allowed to discharge through Outfall 002.

4. All drums containing hazardous substances now stored west of the cooling towers shall either be removed from the plant site within 120 days or shall be managed in a storage area meeting the interim status standards for storage of hazardous wastes in containers (40 CFR 262.34 and 265.170-177) until a R.C.R.A. permit is issued to this facility. All other containers that have held hazardous wastes shall either be triple rinsed or otherwise managed so that they meet requirements for exclusion as a hazardous waste.

SAMPLE RATIONALE FOR STATE PERMIT

RATIONALE FOR PERMIT CONDITIONS AND EFFLUENT LIMITS

Universe Company
Caladan, Dune
Permit No. CD0000191
Dune DEQ Operation Permit No. 5-23-26-1-12

DESCRIPTION OF FACILITY

Universe Company operates an industrial organic chemicals and plastics materials plant on an 800 acre site in Sections 19 and 20, Township 81N, Range 6E, Caladan County, Dune, southwest of the City of Caladan and west of Arrahane. The plant produces ethylene, propylene, high density polyethylene plastic, low density polyethylene plastic and ethylene-vinyl acetate copolymer plastic from an ethane-propane feedstock. These manufacturing operations are included in Standard Industrial Classification (SIC) codes 2821 and 2869.

Figure 1 shows the layout of the Universe Facility, including the location of outfalls. Process wastewaters from the ethylene and polyethylene plants, cooling tower blowdown and stormwater runoff from paved process areas receive treatment including equalization, neutralization, flocculation, primary clarification, aeration (activated sludge system) and final clarification prior to discharge to a final polishing pond [Figure 2]. Surface runoff from about one-fourth of the plant site receives settling in an earthen storm pond before discharge to the final polishing pond. Effluent from the pond discharges through Outfall 001, a 4-mile pipeline discharging to the Uncompahgre River in Section 5, township 80N, Range 6E. This discharge averaged 1.7 mgd in 1980 but is expected to increase to 2.1 mgd upon completion of a plant expansion in early 1981.

Stormwater runoff from the remainder of the plant site is discharged through 4 outfalls to small intermittent tributaries of Usul Creek, a tributary of the Uncompahgre River. Outfalls 002 and 003 on the east side of

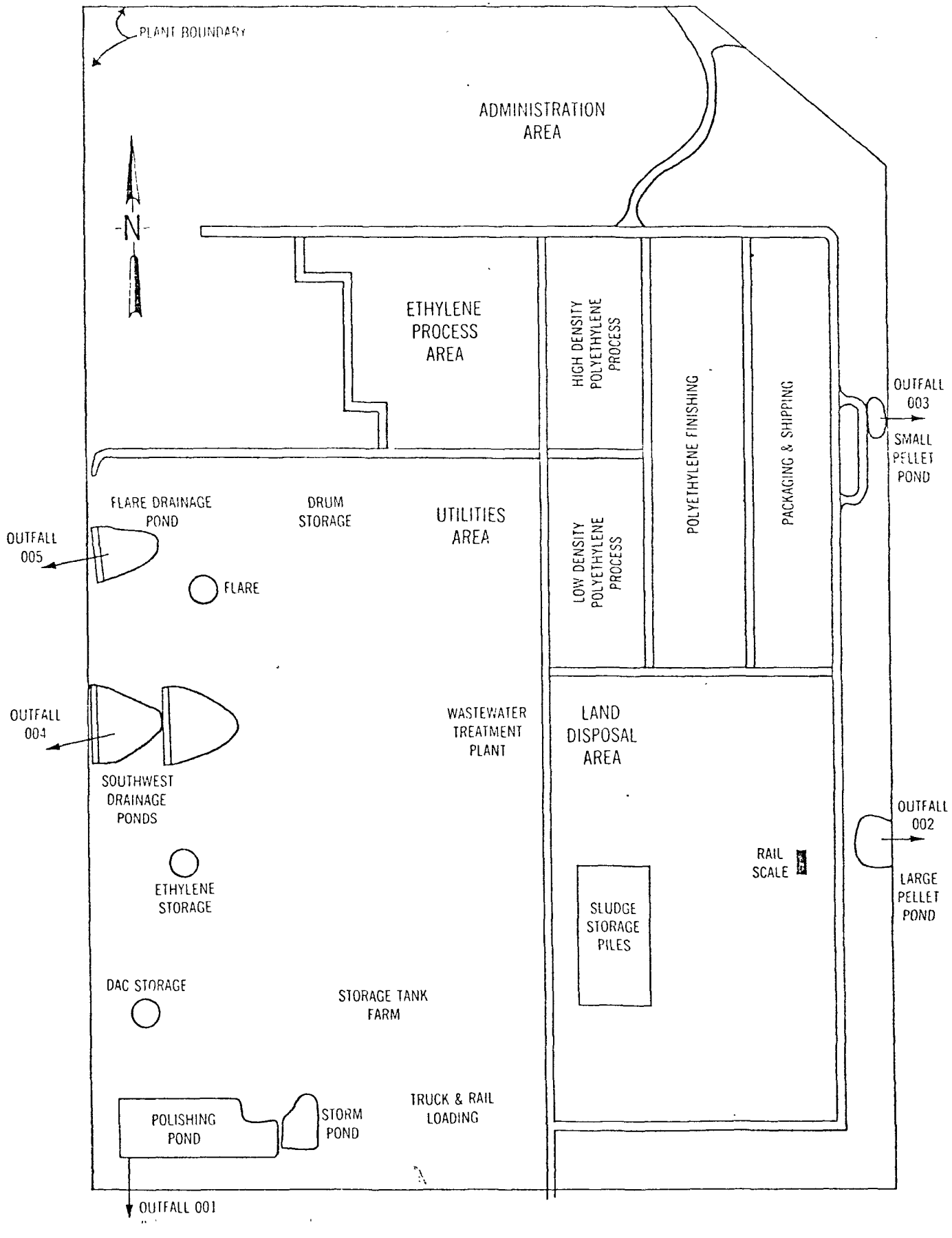

PLANT BOUNDARY
ADMINISTRATION AREA
N
ETHYLENE PROCESS AREA
HIGH DENSITY POLYETHYLENE PROCESS
POLYETHYLENE FINISHING
PACKAGING & SHIPPING
OUTFALL 003
SMALL PELLET POND
FLARE DRAINAGE POND
DRUM STORAGE
UTILITIES AREA
OUTFALL 005
FLARE
LOW DENSITY POLYETHYLENE PROCESS
OUTFALL 004
WASTEWATER TREATMENT PLANT
LAND DISPOSAL AREA
SOUTHWEST DRAINAGE PONDS
OUTFALL 002
RAIL SCALE
ETHYLENE STORAGE
SLUDGE STORAGE PILES
LARGE PELLET POND
DAC STORAGE
STORAGE TANK FARM
POLISHING POND
STORM POND
TRUCK & RAIL LOADING
OUTFALL 001

FIGURE 1

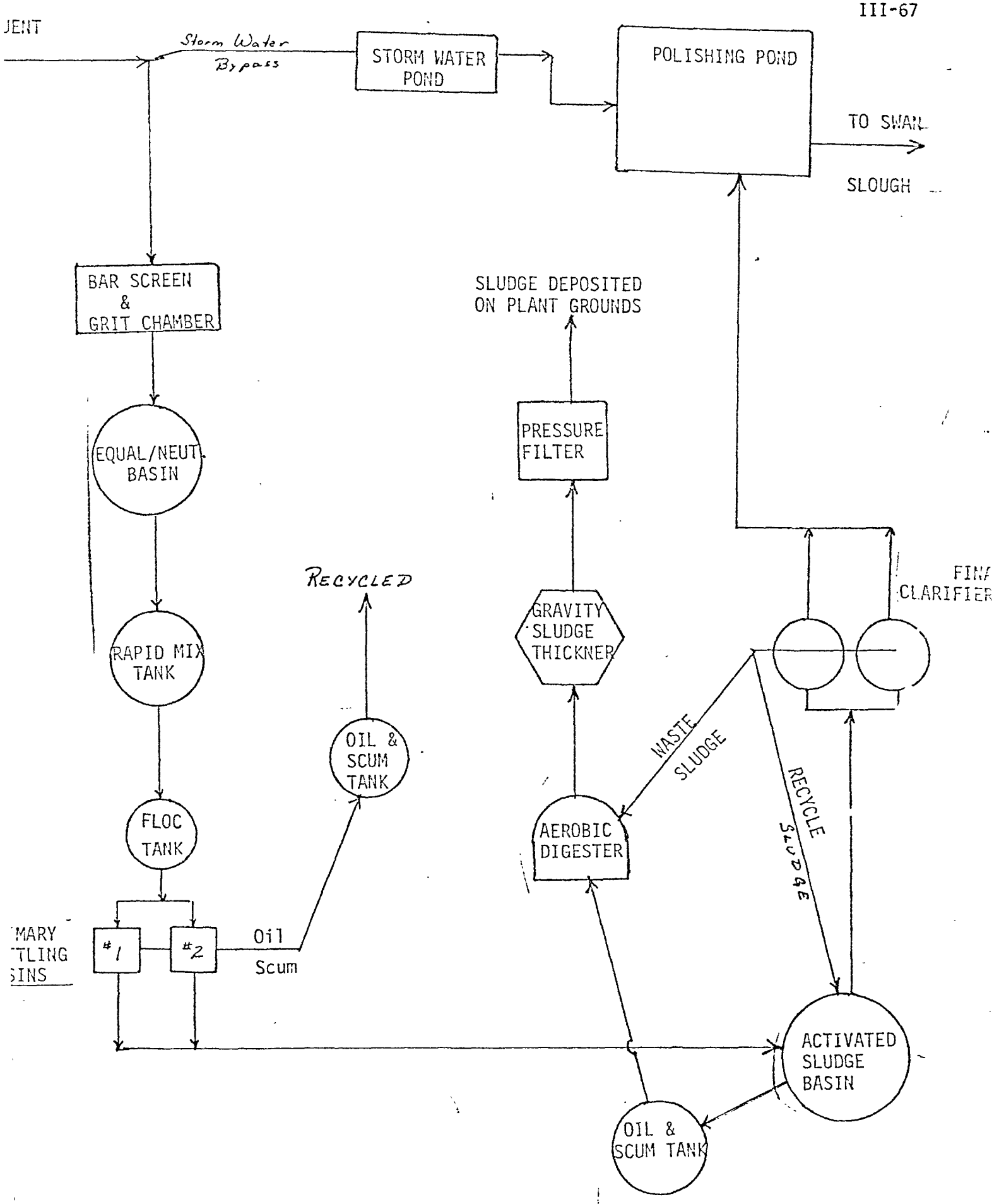


FIGURE 2

WASTE TREATMENT PLANT

the plant drain the polyethylene areas and are equipped with pellet traps. Outfalls 004 and 005 on the west side of the plant drain the ethylene, utility and storage tank areas and pass through settling ponds. These outfalls flow only after heavy precipitation. No flow data are available.

Dune Water Quality Standards assign water uses to be protected in the receiving waters. For Usul Creek downstream of Highway 67, these uses are designated as wildlife, fish, aquatic and semi-aquatic life and secondary contact recreation. For the Uncompahgre River, uses to be protected include primary contact recreation in addition to the uses listed above for Usul Creek.

RATIONALE FOR EFFLUENT LIMITS - Outfall 001

1. Location

Sampling of this outfall shall be performed at the existing monitoring point on the effluent from the final polishing pond to the outfall pipeline.

2. Waste Streams

The wastes in this discharge consist of:

a. Effluent from the main wastewater treatment plant which includes:

1) Process wastewaters from the ethylene plant that have received pretreatment in a steam stripper and coalescer;

2) Process wastewaters from a high density polyethylene plant (Philips process), a low density polyethylene plant (Dupont process and USI process) and an ethylene-vinyl acetate copolymer plant;

3) Cooling tower blowdown which has received pretreatment for for reduction of hexavalent chromium and for removal of chromium and zinc;

4) And, stormwater runoff from paved process areas in the ethylene and polyethylene plants.

b. Stormwater runoff from about one-fourth of the non-process portion of the plant site including sludge storage and landfarm areas, truck and rail car loading areas and some storage tank areas. This runoff receives settling in an earthen basin before discharge to the final polishing pond.

3. Basis for Limitations

a. Interim Limits

The interim limits are based on best practicable technology (BPT) for all contributing processes and reflect an allowance for the current 40% increase in production. There are no present EPA promulgated effluent guidelines for ethylene or polyethylene plants. Effluent guidelines were promulgated for ethylene and polyethylene plants in 1974 and revoked in 1976 as a result of a court case. As a result, it was necessary to derive effluent limits reflecting BPT level treatment using Best Professional Judgment (BPJ) procedures and the following information.

1) The present Dune DEQ Operation Permit.

2) The revoked ethylene BPT guidelines.

3) The revoked polyethylene BPT guidelines.

4) Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Major Organic Products Segment of the Organic Chemicals Manufacturing Point Sources Category, EPA, April 1974.

5) Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Synthetic Resins Segment of the Plastics and Synthetic Materials Manufacturing Point Source Category, EPA, March 1974.

6) Personal communications with EPA Effluent Guidelines Division (EGD) staff concerning the results of recent EGD studies and tentative approaches to new guidelines for these industrial categories.

7) Universe self-monitoring data showing the performance of the existing treatment system and pollution controls for the 21-month period, January 1979 to September 1980.

Review of the self-monitoring data indicates that the interim effluent limits developed below can be met by the existing treatment system.

b. Final Limits

Because there are no EPA promulgated guidelines applicable to this plant, the final limits are based on best conventional pollution control technology (BCT) for conventional pollutants and best available technology (BAT) for toxic and non-conventional pollutants derived using BPJ procedures and the following information:

1) The revoked BAT guidelines for ethylene and polyethylene plants.

2) Information items 3.a.4-7 above.

3) The Treatability Manual, EPA, July 1980, (EPA-600/8-80-042e).

4. Effluent Limits

a. Conventional Pollutants

The conventional pollutants of concern in this discharge are BOD, TSS, Oil and Grease, and pH. Consistent with most effluent guidelines and with applicable Dune water quality standards, a pH range of 6.0 to 9.0 was established for this permit.

In the present permit, Universe was required to meet effluent limits for conventional pollutants based on BPT level treatment. Review of the development documents [references 3(a) 4 and 5] for ethylene and polyethylene indicated that the model treatment systems on which BPT guidelines were based included flow equalization, neutralization, aeration (activated sludge), and final clarification for ethylene and the same processes plus chemical addition and a final polishing process for polyethylene. The present Universe treatment system [Figure 2] includes equalization, neutralization, chemical addition, coagulation, flocculation, primary clarification, aeration (activated sludge), final clarification, and a final polishing pond. The present Universe treatment system thus represents a higher level of treatment than the 1974 model BPT system.

A review of the Discharge Monitoring Reports (DMRs) for the 21-month period January 1979 to September 1980 indicates that treatment plant performance is good and that average effluent loads are within current permit limits. Occasional TSS discharges in excess of daily maximum effluent limits have been observed. Several factors appear to contribute to these high TSS loads. The treatment units are relatively small compared to total wastewater flow making the treatment system somewhat vulnerable to upsets from slug loads or hydraulic surges. The equalization tank has only about 2 hours

flow detention in comparison to 24 hours for the model BPT treatment system. Some solids handling problems in the sludge system have occurred which would affect TSS loads in the final effluent. Stormwater is discharged to the final polishing pond with limited settling which would increase TSS concentrations in the final effluent.

A majority of the recent plant expansion began operating in June 1980. Although waste loads to the treatment system increased, final effluent loads remained near pre-expansion levels during the following three months indicating the treatment system has capacity to handle the expanded loads. The effluent loads reported were in compliance with permit limits which were based on pre-expansion production rates.

To determine a rationale for interim and final limits for conventional pollutants, a comparison was made between the present permit limits, the reported plant effluent waste loads, the revoked BPT and BAT guidelines, and new tentative BCT target guidelines [Table 1]. The comparisons were made for both the old and new (40% increase) production levels. In Table 1, the BOD and COD concentrations for the new production levels were computed by dividing computed waste loads by 2.14 mgd, the expected average daily flow at full production. For the new BCT limits, waste loads were computed from the target daily average concentrations and the 2.14 mgd flow. No new BCT daily maximum concentrations were available from EGD at this time.

1) <u>BOD</u>

A comparison of BOD limits in the current permit with the revoked BPT guidelines shows that the permit limits are about 50% higher than the guidelines. In contrast, the final plant effluent for the 21-month period averaged about half of the permit limits. Assuming that a 40%

Table 1

COMPARISON OF VARIOUS EFFLUENT LIMIT BASES

Basis		BOD				TSS				COD			
		Daily Avg.		Daily Max.		Daily Avg.		Daily Max.		Daily Avg.		Daily Avg.	
		lb/day	mg/ℓ	lb/day	mg/ℓ	lb/day	mg/ℓ	lb/day	mg/ℓ	lb/day	mg/ℓ	lb/day	mg/ℓ
1	Current Permit	409	31	819	62	350	26	600	45	2,500	187	5,000	375
2	Current Permit x 1.4	573	32	1,147	64	490	27	840	47	3,500	196	7,000	392
3	21-Month Average Plant Effluent	183	13	484	34	346	25	689	51	1,218	88	2,067	162
4	21-Month Average x 1.4	256	14	678	38	484	27	965	54	1,705	96	2,894	162
5	Old BPT Guidelines, Old Production	270	19	540	38	634	45	1,205	85	-	-	-	-
6	Old BPT Guidelines, New Production	450	25	919	51	1,057	59	2,006	112	-	-	-	-
7	Old BAT Guidelines, New Production	355	20	555	31	316	18	412	23	3,804	213	5,527	310
8	New BCT Target Guidelines (Based on target concentration x 2.14 mgd)	482	27	-	-	89	5	-	-	-	-	-	-
9	Proposed Universe Interim Limits	355	20	710	40	490	27	840	47	2,500	140	5,000	280
10	Proposed Universe Final Limits	355	20	710	40	355	20	710	40	1,600	90	3,200	180

increase in the final effluent BOD load would occur due to the 40% production increase (initial treatment plant response indicates the increase will be less), the actual effluent would still be less than BPT guidelines and would probably be less than the revoked BAT guidelines. Comparison of the new BCT target concentration vs. the revoked BAT shows that it is higher (27 vs. 20 mg/ℓ). Use of the new BCT limit would allow a larger BOD load than the present permit but less than the present permit limit adjusted for the production increase.

Because none of the guidelines used for this comparison are promulgated regulations and the new BCT target values may be revised, the limits in this permit were established using best professional judgment (BPJ). A daily average BOD limit of 20 mg/ℓ was selected for both the interim and final limits. The corresponding load in Table 1 was based on the 2.14 mgd expected flow. This limit should allow for some minor decrease in the treatment plant efficiency due to increased hydraulic and waste loading but require good plant operation and maintenance in order to consistently meet the limit.

No increased allowance was made for stormwater runoff as no increase should occur as a result of the plant expansion.

A variability factor of 2.0 was used to derive the daily maximum limit. This ratio is consistent with the average of the revoked BPT and BAT guidelines for ethylene and polyethylene. Ratios in these guidelines ranged from 1.56 to 2.2. The observed ratio for the actual plant effluent was 2.6 for the 21-month period. However, improvements for reduction of TSS discussed below should reduce daily maximum loads.

The interim limits for BOD were set the same as final limits as the plant should be able to achieve these limits immediately. Consideration was given to reducing the final daily maximum limit to 31 mg/ℓ consistent with the revoked BAT guidelines. However, this reduction was not adopted for several reasons. The new BCT target concentration suggests that 31 mg/ℓ would be unreasonable to achieve. The historic plant performance also supports this. Setting the lower limit would probably result in occasional violations of daily maximum limits without achieving any significant reductions in pollutant loads.

2) TSS

A different set of circumstances exists for TSS as compared to BOD at this plant. As shown in Table 1, the current permit limits for TSS are substantially more stringent than the revoked BPT guidelines. Daily average TSS loads approximate the permit limits and daily maximum loads occasionally exceed the limits. High effluent TSS levels occur periodically. One cause of this is that the final pond receives stormwater runoff with high TSS and the detention time does not allow for adequate settling.

The revoked BAT guidelines would have required a daily average TSS concentration of 23 mg/ℓ. The new BCT target daily average TSS concentration is 5 mg/ℓ, substantially more stringent than previous guidelines and beyond the capability of the present Universe waste treatment facility.

As previously discussed the Universe treatment facilities exceed the BPT model treatment system in its capability. However, it has less capability than the model

systems for the revoked BCT and new BCT. For the revoked BAT, the model system added dual media filtration (DMF) and/or a dissolved air flotation (DAF) unit to the ethylene BPT model treatment system. For polyethylene, the BAT additions were DMF and granulated activated carbon. For the new BCT limits, the model treatment would include DMF and/or DAF units in addition to the present Universe treatment system. The addition of these final polishing units was expected to reduce TSS concentrations to an average of 5 mg/ℓ.

In the absence of promulgated BCT guidelines for an applicable industry category, BCT for conventional pollutants must be determined on a plant specific basis using a BCT cost test procedure. This procedure is designed to evaluate the reasonableness of the cost of removing additional conventional pollutants at this facility relative to their present waste discharge and relative to the cost of an equivalent waste load reduction in a publicly owned treatment works (POTW). This procedure is defined in the EPA BCT Cost Test Guidance Manual.

It is apparent from a review of Universe records that improvements in the treatment system are needed to reduce the large fluctuations in TSS concentrations in the final effluent. The revoked and new tentative guidelines also indicate a need to reduce average TSS levels. Varying degrees of TSS reductions could be achieved by a variety of treatment system improvements or additions. Several options were evaluated using the BCT cost test as a basis for selecting final effluent limits.

To achieve a reduction of TSS to a daily average of 5 mg/ℓ would require the addition of DMF and/or DAF units for polishing the final effluent. In addition, added flow equalization at the treatment plant influent would probably be required. A DMF unit adequate for the expected average flow of 2.14 mgd would have an estimated capital cost of $1.8 million and an annual cost of $0.66 million in 1979 dollars based on EPA Treatability Manual data. To reduce TSS from the interim permit limits of 490 lb/day to 89 lb/day (5 mg/ℓ) would result in the removal of about 146,000 pounds of TSS annually. The estimated removal cost using only the DMF unit would be about $4.52/lb, about 3.0 times the equivalent removal cost in a POTW. The unit removal cost for a DAF unit was estimated to be about 30% higher than a DMF unit. Thus, neither unit passes the cost test and the cost of reducing TSS to 5 mg/ℓ does not appear to be reasonable at this facility.

In this cost test, no removal credits were included for BOD or Oil and Grease. Both pollutants are already at low levels. If a 50% reduction in both BOD and Oil and Grease were achieved by the added treatment, the DMF or DAF units would still not pass the cost test.

To determine what lower level of TSS reduction would be acceptable, an evaluation was made of the potential effects of TSS on the receiving water and on the discharge of other pollutants such as COD and toxic substances. The receiving stream is the Uncompahgre River with a large flow and with TSS levels well above 5 mg/ℓ. TSS concentrations in the range of 20 mg/ℓ would not be expected to significantly affect the River.

There does not appear to be a direct correlation between COD and TSS in the final effluent. This suggests that most of the oxygen demanding substances remaining are in a soluble form and not particulate. Allowing a TSS concentration of 20 mg/ℓ rather than 5 mg/ℓ should not significantly affect the COD load discharged.

Data on organic toxic pollutants and heavy metals indicate only very low levels are discharged. The solids discharged would thus be expected to contain insignificant loads of toxic substances.

Several other alternative treatment system improvements were considered. Review of the DMR data indicated that daily TSS levels in the effluent from the wastewater treatment plant final clarifier vary widely from day to day as do the plant influent waste loads. The installation of additional flow equalization capacity and/or a third final clarifier would reduce the fluctuations in effluent TSS levels through dampening of flow and raw waste load fluctuations and by the added TSS removal in the final clarifiers. Plant operating history, as reflected in the DMR data, suggests that an average TSS level of 20 mg/ℓ in the polishing pond effluent could be achieved by these improvements. A final effluent limit based on 20 mg/ℓ would reduce the daily average discharge of TSS from 490 to 355 lb/day, an annual reduction of about 49,000 lb.

Based on Treatability Manual cost data, additional flow equalization capacity in the range of 1 to 2 million gallons would have estimated annual costs in the range of $0.3 to $0.4 million. These costs result in unit removal costs of about $6.12 to $8.16/lb of TSS which fails the BCT cost test. The estimated annual cost of a third primary clarifier would be at least

$0.20 million. This converts to a unit removal cost of at least $4.08/lb of TSS which also fails the BCT cost test. The installation of added flow equalization or a third final clarifier are thus not justifiable.

Comparison of TSS levels in the final clarifier effluent and the final polishing pond effluent showed that when final clarifier effluent levels were low, small increases (2-6 mg/ℓ) in TSS levels occurred through the final pond. This suggests that these increases may have been at least partially due to the direct inflow of stormwater to the final pond from the storm pond, i.e. inadequate detention time in the storm pond.

In contrast, when TSS levels in the final clarifier effluent were high (2 to 6 times average levels), substantial reductions (> 50%) occurred through the final pond. These observations suggest several less expensive treatment system improvements to reduce final effluent TSS levels and, more importantly, peak load fluctuations.

The stormwater pond is small and was in need of maintenance dredging at the time of the NEIC visit. This unlined earthen basin could be easily doubled in size from 0.5 to 1.0 million gallons and maintenance dredging performed more frequently to reduce TSS levels in stormwater entering the final pond. Such improvements are estimated to cost less than $10,000 annually.

The final polishing pond is also dredged infrequently. Although solids accumulation rates are low, increased dredging frequency should reduce the potential for resuspension of solids during peak hydraulic flows or wave action. The annual costs for increased dredging frequency are estimated as less than $10,000.

To achieve a reduction in daily average TSS effluent levels to 20 mg/ℓ would require some reduction in peak hydraulic flow fluctuations and additional final polishing capacity, in addition to improvements in the existing stormwater and final ponds. Careful management and scheduling of intermittent activities which produce large volumes of wastewater and/or wasteloads could also help minimize peak hydraulic and waste loads.

The present final polishing pond has a nominal capacity of about 5 million gallons which provides about 3 days detention at average 1980 flows. The expected flow increase with the current plant expansion would decrease detention time to about 2 days with a corresponding decrease in TSS removal. The addition of a second polishing pond in series to increase total detention time to about 4 days was selected as an adequate alternative to achieve a final effluent average TSS concentration of 20 mg/ℓ. The annual cost of a 4 million gallon clay-lined earthen basin is estimated as less than $50,000.

The total estimated annual costs for the additional polishing basin, improvements in the stormwater basin and increased dredging frequency in the final pond are $70,000. Estimated unit removal costs would be $1.43/lb of TSS, 0.96 times the equivalent removal costs in a POTW. The BCT cost test conditions are thus met by this treatment option.

The final daily average TSS load limit [Table 1] is based on the estimated performance of this improved treatment system (20 mg/ℓ) and an expected flow rate of 2.14 mgd. The daily maximum TSS limit was based on a variability factor of 2.0. This is consistent with observed treatment system performance and revoked guidelines.

The interim TSS limits were established using the present permit limits increased by 40% to allow for the production expansion and the demonstrated difficulty of the treatment system in achieving present permit limits. The interim limits are less than half the allowable loads under the revoked BPT guidelines.

Oil and Grease limits were established as 10 mg/ℓ daily average consistent with the new BCT target guidelines and 20 mg/ℓ daily maximum based on the current permit. Review of the DMR data indicates that these limits can be consistently met.

b. Non-Conventional Pollutants

Two non-conventional pollutants are limited in the current Universe permit, chemical oxygen demand (COD) and phenols. Both parameters will be retained in the new permit because they are useful indicator parameters for evaluating the efficiency of an industrial waste treatment system.

1) COD

A comparison was made between current permit limits, COD levels in the plant effluent, and the revoked BAT guidelines [Table 1]. There were no BPT guidelines for COD proposed for the ethylene category in 1974 so no comparison can be made with BPT for the combined plant. No new COD guidelines were available from EGD. Past effluent loads average about half of the current permit limits which are in turn about 50% lower than the revoked BAT daily average limit. Some increase in COD loads has occurred as a result of the production increase but the waste load increases should be less than 40% based on results to date.

Interim COD load limits were established as equal to the current permit limits. Concentration limits were adjusted downward consistent with the increased allowable flow. These limits are more stringent than the revoked BAT guidelines. However, Universe should have no difficulty meeting the limits with existing treatment facilities.

Universe installed several pretreatment units in the ethylene area in 1980 with full operation to be obtained in early 1981. These are a filter, a coalescer, and a steam stripper on the contact dilution steam blowdown from pyrolosis furnaces. This waste stream is the largest load of COD and Oil and Grease in the plant. The pretreatment units are part of a steam recycle system that will reduce this wastewater stream by about 150 gpm and will reduce the Oil and Grease and COD loads by recovery and removal of residual oils. Full operation of the pretreatment system coupled with the treatment improvements proposed for reduction of TSS should at least partially offset any increases in COD loads due to production increase.

Review of the 1974 Development Documents for ethylene and polyethylene effluent guidelines indicated that the ethylene BAT limits were based on a final effluent COD concentration of 50 mg/ℓ and the polyethylene BAT limits on 130 mg/ℓ. The average of these (90 mg/ℓ) is comparable to average plant performance (88 mg/ℓ). The 90 mg/ℓ guidelines average was selected as the final daily average limit as it is more stringent than the current BPT permit limits, it is more stringent than the revoked BAT guidelines, but it should be readily achievable by the increased treatment proposed. A variability factor of 2.0 was used to develop the daily maximum limit consistent with the current permit and observed plant performance.

2) Phenols

Phenols are presently limited to an average of 0.4 mg/ℓ but recent operating data indicates an average discharge of less than 0.1 mg/ℓ. Interim limits for this parameter are based on current operating data and are set at 0.1 mg/ℓ average, and a maximum of 0.5 mg/ℓ.

Final limits of 0.05 mg/ℓ average, and 0.1 mg/ℓ maximum are based on the levels established in the tantative new BAT guidelines.

c. Toxic Substances (Priority Pollutants)

EGD in sampling wastewaters from various industrial facilities of the same category as Universe detected significant discharges of the following 13 priority pollutants: acetanaphthalene, anthracene, benzene*, benzo(a)anthracene*, chromium*, copper*, di-butyl phthalate*, dimethyl phthalate*, fluorene, napththalene, phenanthrene, phenols, pyrene and toluene*. Tentative target effluent concentrations of 0.05 mg/ℓ were established by EGD for the seven pollutants marked with an asterisk(*). EGD determined that the model BPT level treatment system for an ethylene/polyethylene plant could achieve acceptable effluent concentrations of six of the 13 priority pollutants. Increased treatment (BAT level) was determined to be necessary to achieve target or acceptable levels for anthracene, benzene, chromium, copper, fluorene, phenanthrene and pyrene. The BAT treatment improvements considered were; pretreatment of selected waste streams, followed by combined treatment in the BPT model system. For the ethylene plant, pretreatment systems evaluated included coagulation/flocculation, steam stripping, and/or ion exchange. For the polyethylene plant, pretreatment units were coagulation/flocculation, oil separation, DMF, ion exchange, and/ or DAF.

Universe's current permit establishes effluent limits and requires daily monitoring for two priority pollutants: chromium (total and hexavalent), and zinc. In addition, weekly monitoring is required for two priority pollutants (toluene and naphthalene) and a related compound, styrene. There are thus substantial amounts of data on these five pollutants. The only other toxic substance data available were complete priority pollutant analyses of three 24-hour composite samples of final pond effluent taken in June 1979 by EPA Region VII. Bioscreen tests including a fish test, a water flea test, an alga test and the Ames test were conducted on the Universe effluent by EPA Region VII in August 1980. The results were negative indicating no effluent toxicity. The bioscreen was conducted after most of the current plant expansion had been completed. The EPA priority pollutant analyses detected 7 priority pollutants [Table 2] in the effluent, all at levels less than 0.015 mg/ℓ except for zinc that ranged from 0.035 to 0.042 mg/ℓ. Naphthalene, styrene and toluene were below detection limits.

During the October 1980 EPA inspection, Universe identified 21 toxic or hazardous substances that are used as raw materials or produced as products or by-products in this facility. Five of these are priority pollutants. An additional six priority pollutants were detected in the effluent by the EPA sampling. The 11 priority pollutants and 28 toxic or hazardous substances are listed in Table 2. As required by the Consolidated Permit Regulations, consideration must be given to establishing effluent limits and monitoring requirements for the 11 priority pollutants.

Because available priority pollutant data were not considered adequate to fully assess the ability of the present Universe treatment system to achieve final priority pollutant effluent limits established below, a phased approach to limiting priority pollutants was adopted. Interim limits were established

Table 2

TOXIC AND HAZARDOUS SUBSTANCES

ammonia

benzene[1,4]

butadiene

butylenes

cyclohexane

chromium[1,2,4]

DAC - debutanized aromatic concentrate containing benzene,[1] toluene[1] and xylene.

ethylene

hexane

hexene

isobutane

naphthalene[1,2,3,4]

pentachorophenol[1,2]

p-chloro-m-cresol[2]

phenols[2,4]

propylene

residual oils

"soltrol" (a refined kerosene, mineral spirits mixture)

styrene[2,3]

1,1,2,2-tetrachloroethane[1]

1,1,2,2-tetrachloroethene[1,2]

toluene[1,2,3,4]

trans-1-2-dichloroethylene[1,2]

trichloroethylene[1]

vinyl acetate

xylene

zinc[1,2]

1 Priority Pollutant
2 Detected in effluent by EPA, Dune DEQ or Universe
3 Toluene, styrene, and naphthalene were below detectable limits in the effluent in the EPA priority pollutant samples.
4 Priority pollutants detected at significant levels at other similar plants by EGD sampling.

on selected pollutants as described below. Regular monitoring is required for these pollutants. Monthly monitoring for 6 months is required for other selected priority pollutants. In addition, a complete priority pollutant analysis will be required within 3 months of the effective date of the permit. Based on the results of the first 6 months of priority pollutant analyses, a determination will then be made whether or not to increase or decrease monitoring requirements, revise effluent limits, and/or provide increased wastewater treatment.

Chromium and zinc are used as corrosion inhibitors in the cooling system. These toxic pollutants are present in the cooling tower blowdown in concentrations as high as 10 mg/ℓ. Electrolytic treatment for reduction of hexavalent chromium and pH adjustment and settling for removal of both chromium and zinc are provided as pretreatment for this blowdown stream prior to discharge to the main treatment plant. This combined treatment is considered equivalent to BAT for these metals. The present permit limits total chromium to 0.13 mg/ℓ and hexavalent chromium to 0.2 mg/ℓ (daily average). Effluent concentrations average about 10% of these limits (zero for hexavalent chromium). Zinc is presently limited to 0.6 mg/ℓ and also averages 10% of this limit. Interim and final limits for total chromium were established at 0.05 mg/ℓ based on the tentative target BAT concentration and demonstrated plant performance. The corresponding zinc limits were set at 0.1 mg/ℓ based on demonstrated plant performance. Internal monitoring of the chrome treatment system for total and hexavalent chromium and zinc required in the current permit to assess the system operating efficiency was continued. Monitoring of the final effluent for hexavalent chromium was dropped because past data indicate essentially zero discharge, the total chromium limit is now very low and monitoring will be continued at the chrome treatment system where detection of any treatment problems is easier.

The current permit contains monitoring requirements for the priority pollutants, naphthalene and toluene, and the related compound styrene. These compounds have been monitored as the result of several fish tainting cases that occurred prior to the installation of the present BPT level treatment system. Weekly monitoring for the past several years has detected these compounds only part of the time and then usually at trace levels, well below the 0.05 mg/ℓ target BAT concentration for toluene. Because these past data were available and these substances will be controlled indirectly by other limits, no limits were established for naphthalene, styrene, and toluene and the monitoring requirement was dropped.

Benzene is a major constitutent of the by-product DAC and was detected in significant concentrations in EGD samples collected at similar facilities. However, it was below detection limits (0.001 mg/ℓ) in the three EPA samples of Universe effluent, the only benzene data available. An interim limit of 0.1 mg/ℓ was established, twice the final limit of 0.05 mg/ℓ which was based on the tentative BAT target concentration. Based on the limited data available, the interim limit should be easily achievable with present treatment. The 6-month monitoring period will allow an evaluation of the need for additional treatment to meet the final limit. If necessary, this could be accomplished by pretreatment of the small 20 gpm concentrated waste stream from the steam stripper in the ethylene area. Benzene should serve as an indicator for toluene and other organics present in the DAC mixture.

The remaining five priority pollutants in Table 2 were either not detected in the EGD samples or were found to be removed to acceptable levels by the BPT model treatment. Neither were they present in the three EPA samples collected at Universe. For these reasons, no effluent limits or monitoring requirements were established for the five.

There were five priority pollutants present in the EGD samples which were not adequately removed by the BPT level model treatment. These five (anthracene, copper, fluorene, phenanthrene, and pyrene) were not detected in the three EPA Universe samples. No interim limits were established for these substances. However, because of the potential for their presence, final permit limits have been established based on target BAT concentrations and monthly monitoring is required for 6 months beginning with permit issuance. Six months of monitoring should be adequate to determine if additional monitoring and/or final permit limits are necessary or if additional treatment will be needed.

d. Hazardous Substances

There are 15 hazardous substances used as raw materials or produced as products or by-products by Universe that are not priority pollutants [Table 2]. Discharges of these substances in excess of reportable quantitities established by regulations promulgated under Section 311 of the Clean Water Act must be reported as spills and are subject to penalties and enforcement actions unless such discharges are regulated by NPDES permit limitations. All of the 15 hazardous substances are normally discharged in less than reportable quantities and no permit limits have been established.

Ammonia is added as a nutrient at the wastewater treatment plant. Universe reported an average effluent concentration of 4.2 mg/ℓ in their 1977 permit application. At the expected flow of 2.14 mgd, this would be an average load of 75 lb/day. No limit is considered necessary because feed rates are controlled to minimize use of this substance.

Most of the hazardous substances are associated with ethylene production and are recycled, used in polyethelene

production, or sold as by-products. Any unusual releases of these substances would be detected by Oil and Grease monitoring or other conventional pollutant parameters. The most volatile substances would be removed by the wastewater treatment plant. Residual oils and Soltrol (a kerosene mixture) are recovered for recycle or sale. Discharge of these substances would be measured by the Oil and Grease test. Debutanized aromatic concentrate (DAC) is a major by-product containing primarily benzene, toluene and xylene. Permit limits and monitoring requirements have been established for benzene that would detect any increased discharges of DAC. Vinyl acetate is a raw material used in the production of vinyl acetate copolymer plastic.

e. Monitoring Requirements

Monitoring requirements for Outfall 001 were established based on the current permit, on Dune DEQ Rules, Chapter 18, Rule 18.11 and Table III, and on an evaluation of DMR data.

Monitoring requirements for flow, BOD, TSS, COD and pH are based on the current permit and require the same frequency as Rule 18.11, Table III (Category III C industry) or an increased frequency (3 vs 2/week) to assist in evaluation of fluctuating waste loads. Oil and Grease monitoring was set at 3/week consistent with monitoring for other conventional pollutants. Review of the DMR data indicates daily monitoring of Oil and Grease is not necessary to assure adequate controls. Monitoring for phenols and the toxic substances benzene, chromium, and zinc was set at 1/wk based on the Table III requirements for a Category IV D industry. The current permit requires daily monitoring for chromium, zinc and phenols. Review of the DMR data indicates this frequency of monitoring is not needed on the final effluent as monitoring of internal points in the waste treatment system as discussed below achieves adequate control of these parameters.

Monthly monitoring of anthracene, copper, fluorene, phenanthrene and pyrene for 6 months is required. As discussed in the previous section on toxic substances, the purpose of this monitoring is to determine the need for continued monitoring and/or effluent limits for these substances.

The current permit requires a variety of monitoring at internal points in the waste treatment system to provide data for evaluation of the operation of the treatment system. These monitoring requirements are continued in this permit to provide continued evaluation of system operation. Three minor modifications were made in the current permit requirements to achieve consistency with Rule 18.11, Table III requirements. The BOD monitoring frequency was changed from 1/week to 2/week. For BOD and TSS, an additional sampling point was established at the influent to the equalization tank.

STORMWATER MONITORING

Four stormwater discharge points were identified during an inspection of the Universe, Caladan facility conducted by NEIC, EPA Region VII, and DDEQ in October 1980. None of the 4 discharge points are mentioned in the current Dune Operating Permit. There are no data available on the quantity or quality of water being discharged from these points. In order to evaluate any environmental impact, Universe will be required to monitor the discharges for one year. If after one year the data indicate that the water from these points is uncontaminated, the monitoring may be discontinued. However, if the data indicate that there is some contamination, the Director may require continued monitoring and/or treatment. Each of the 4 locations is identified below and Figure 1 shows the approximate location of each.

Outfall 002

The "large pellet pond", a small earth basin with an underflow baffle and concrete overflow weir designated Outfall 002, is located near the rail

scales on the eastern border of the plant. This pond receives drainage from unpaved portions and roadways in the polyethylene area of the plant and discharges to a small intermittent stream which runs east of the plant. The pond acts as a trap to catch any pellets which are in the runoff. The pellets are removed and reclaimed periodically. Flow from this pond can be significant after a heavy rain. Some of the area which drains to this pond is adjacent to the polyethylene processing area which increases the potential for contamination of the runoff. Paved and diked areas in the processing area drain to the wastewater treatment system. If monitoring indicates contamination, it may be necessary to require that the initial flush after a rain be captured and treated prior to discharge. This could be done by routing the runoff to the storm pond upstream of the polishing pond through existing gates and drainage ditches.

Outfall 003

The "small pellet pond", a very small earth basin similar to Outfall 002 and designated Outfall 003, is located on the east side of the plant near the polyethylene loading area. This pond receives runoff from the northern side of the polyethylene area as well as the loading area and drains through a ditch to the small stream on the eastern border of the plant. The pond acts as a pellet trap and the captured pellets are periodically removed and reclaimed. This pond receives less flow than the large pellet pond and the drainage area has a lower potential for contamination of runoff. No means of providing additional treatment for this discharge is currently available.

Outfall 004

The "southeast drainage ponds", two shallow unlined earth basins, in series with a surface area when full of about 1.0 acres, are located just north of the large ethylene storage tank on the western border of the plant. The lower pond discharges through an inverted drain pipe (Outfall 004) into a drainage channel along the western border of the plant and ultimately

into a small intermittent stream. These ponds drain parts of the southwestern area of the plant including the wastewater treatment plant, and some of the tank farm area. There is some potential for contamination of runoff at the wastewater treatment plant and by spills or leaks in storage areas.

Outfall 005

The "flare drainage pond", an unlined shallow earth basin with an area of about 0.5 acres, is located west of the flare on the western border of the plant. The pond discharges through an inverted drain pipe (Outfall 005) into a cornfield on the west side of the plant. Discharge from this pond is reportedly very infrequent and only after heavy rainfall. This pond receives runoff from portions of the west side of the plant including the utilities area and the flare area. Some potential for contamination of runoff exists.

PRIORITY POLLUTANT MONITORING

Universe is required to perform a complete priority pollutant analysis* on the effluent from the polishing pond, Outfall 001, within 3 months. This initial testing is necessary to confirm if the low levels or absence of toxic pollutants in the discharge defined by the limited available data (3 samples) are representative of normal operations with the plant expansion in place. After the first test, a complete analysis* is required every 2 years.

Monitoring for specific toxic pollutants, as discussed earlier, is required once a month for the first 6 months. If the results of the 6 months of monitoring indicate the presence of significant levels of toxics, the permit may be modified to include monitoring of the appropriate additional toxic substances and/or additional treatment.

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* This analysis shall include the toxic metals, cyanide and total phenols, and the volatile, base/neutral and acid extractable fractions of the gas chromotograph/mass spectrometry analyses for organic toxic pollutants. The pesticide fraction is excluded.

RATIONALE FOR BEST MANAGEMENT PRACTICES - SPECIFIC CONDITIONS

1. All process wastewaters and most surface runoff from within process areas are discharged to sewers which are routed to the wastewater treatment plant. Some surface runoff is routed directly to the polishing pond. All contaminated runoff is believed to be routed to Outfall 001 so that it receives treatment and is frequently monitored before discharge. This condition formally requires continuation of this containment, treatment and monitoring to minimize discharges of toxic or hazardous substances in surface runoff. In addition, as described in the rationale for storm water monitoring, storm runoff is monitored at four other outfalls to detect any contaminated runoff not routed to Outfall 001 so revisions in storm water controls can be made if necessary.

2. Universe currently stores dewatered sludges from the wastewater treatment plant, "Chem-fixed" sludges from a 1974 dredging of the final polishing pond and lime sludges dredged from the chrome treatment system settling pond in piles in an open area southeast of the wastewater treatment plant. Drainage from the storage area is routed with storm runoff to the settling basin and the final polishing pond. Universe reports that these stored materials do not meet the definition of hazardous wastes as confirmed by applicable tests. However, they do contain toxic and hazardous materials. This condition requires management to minimize transport of these pollutants to the final pond by surface runoff and leachate.

   It is possible that changed conditions (changes in the characteristics of materials being stored or the leachate, changes in test procedures, or changes in definitions of hazardous wastes) could result in the stored material or the leachate being classified as a hazardous material. In such a case, the Director must be notified so that appropriate changes in management and storage practices can be required under applicable RCRA regulations.

3. Universe has begun the operation of a small "land farm" for land disposal of the wastewater treatment plant sludges. Because the sludge is not a hazardous waste, land disposal requirements do not apply. However, toxic or hazardous substances could be potentially present in surface runoff from the disposal area. This runoff now goes to Outfall 002 which has no treatment. This specific condition prescribes management practices to minimize surface runoff and to divert the runoff to Outfall 001 for treatment and frequent monitoring. The runoff diversion can easily be accomplished by a simple short earthen diversion ditch.

4. There are several hundred 55-gallon drums stored west of the cooling towers. Most of the drums are empty but some contain hazardous wastes and most have contained such wastes. This condition requires that the drums containing hazardous wastes either be removed from the plant site or managed in a storage area that would prevent contamination of surface runoff by spills or leaks. Any empty drums must be rinsed or otherwise decontaminated if they are stored in the present area.

IV. NPDES GUIDANCE DOCUMENTS

CONSOLIDATED PERMIT REGULATIONS

The consolidated permit regulations place specific requirements on the permit writer in the preparation of a permit. These regulations should be familiar to every permit writer and should be referred to whenever a question on permit contents or procedures arises.

The bulk of the regulations were promulgated on May 19, 1980, and are contained in 40 CFR Parts 122-124. Also important is Part 125, most of which was promulgated earlier. There have been a number of small additions or revisions to the May 1980 regulations and more are anticipated. The permit writer is cautioned to maintain a current awareness of such changes and always use the latest revision.

Regulations applicable to EPA and State NPDES permits are primarily contained in Part 122, Subparts A and D; Part 124, Subparts A and D; and Part 125, Subparts A and K. Other sections of the regulations also apply to NPDES permits but most are administrative procedures beyond the scope of this manual. Appendix A contains a listing of the consolidated Permit Reglations.

There are several specific regulations that the permit writer should become very familiar with. These include:

122.7	Conditions Applicable to all Permits
122.8	Establishing Permit Conditions
122.10	Schedules of Compliance
122.60	Additional Conditions Applicable to NPDES Permits
122.61	Additional Conditions Applicable to Specified Categories of NPDES Permits
122.62	Establishing NPDES Permit Conditions
122.63	Calculating NPDES Permit Conditions
124.7	Statement of Basis
124.8	Fact Sheet
124.52	Permits Required on a Case-by-Case Basis

124.56 Fact Sheets
125.3 Technology-Based Treatment Requirements in Permits
125 SubpartK Best Management Practices

EFFLUENT GUIDELINES

Promulgated effluent guidelines are, of course, key regulations of use to the permit writer. Because new guidelines have not been promulgated for many key industry types, the promulgated guidelines may have only limited application. Various parts of promulgated guidelines have been revoked or suspended. The permit writer must avoid using such guidelines as if they were in effect. They do, however, provide useful references for BPJ procedures.

Because the status of guideline regulations changes with time, the permit writer must maintain an awareness of this status and specific applicability for the industry types usually worked with. If a new industry type is encountered, the writer may wish to contact the EGD Regional Desk (Mr. Sid Jackson, 212/426-2586) to determine the current status. A listing of promulgated regulations is contained in Appendix B.

There are various contractors' reports, draft Development Documents, Development Documents, and other references generated by the Effluent Guidelines Division that contain a wealth of information on processes, wastewater treatment and control practices, and effluent characteristics that are of use in developing permit conditions using BPJ procedures. Most EPA libraries have copies of most of these documents. Many of these are also available from the National Technical Information Service. EGD can provide information on available references for a particular industry type.

GUIDANCE MANUALS

The Permits Division has prepared a series of guidance documents of use to the permit writer. Others are in preparation. Application of most of these was discussed in Section II. Available manuals include:

BCT Cost Test Guidance, Sept. 1980
NPDES Best Management Practices Guidance Document, Dec. 1979
Policy Book, March 1981
Toxicity Reduction Manual (Draft), July 1980
Treatability Manual, July 1980

PART II
RCRA PERMIT PROCEDURES

V. RCRA PERMIT PROCEDURES

Because the RCRA permit program is new, permit procedures are still under development. There are many similarities or equalities in NPDES and RCRA permit regulations so there are many similarities in permit processing procedures. Many of the administrative procedures are the same and are well established. The RCRA Permit Procedures Manaul (Draft), May 1981, contains much detail on the administrative procedures. Chapter 4 of that manual contains a limited treatment on how to develop ermit conditions. A sample permit is presented in Part II of the manual but there are few instructions on how to apply the sample permit to specific facilities.

Several Permit Guidance Manuals have been developed by the Office of Solid Waste to assist the permit writer in preparing permits for specific types of hazardous waste management units such as tanks, containers, and waste piles. These manuals contain very helpful technical information but again do not contain procedural information on how to convert application data and technical references into specific permit conditions.

To meet the critical need for technical procedural guidance in developing permit conditions, NEIC prepared the material contained in this section and the sample permit in Section VI. Part of this material was then presented at the permit training course given in all 10 Regions and Headquarters.

The procedural guidance parallels the NPDES procedures in the first part of this manual. Permit development steps are presented in narrative, tabular, and graphical form. Because of their bulk, the figures depicting permit procedures in graphical form are presented at the end of this section rather than throughout the text.

Basic procedures for development of RCRA permit conditions and for the initial processing of the permit application are very similar to NPDES procedures. The RCRA basic procedures are summarized in Table 4 and shown

graphically in Figure 1 at the end of this section. The NPDES procedures were previously presented in similar fashion in Section II.

Significant revisions of RCRA regulations are expected to occur during the next year. The basic procedures outlined in Table 4 and shown in Figure 1 should not change significantly as a result. However, the more specific procedures discussed below and shown in Figures 2-9 could change markedly. The permit writer should use the detailed procedures carefully if such regulation changes occur.

PERMIT APPLICATION REVIEW - PART A

The initial step in the permit process is the review of Part A of the application for completeness. It may be necessary to request supplemental information from the applicant to complete the application. Notification of the applicant when the application is complete is also required. Additional information on the application process is contained in Chapter 2 of RCRA Permit Procedures Manual.

DETERMINE IF A PERMIT IS NEEDED

Because of various changes in the permit program or in conditions at the hazardous waste management facility applying for a permit, the facility may not need a permit. For instance, if a facility only generates and stores hazardous wastes, it may no longer require a permit if all wastes are now stored less than 90 days. The facility may handle only wastes which have been delisted and are no longer hazardous wastes. Numerous facilities are now subject to a permit-by-rule and will not require a regular permit.

REQUEST PART B OF THE PERMIT APPLICATION

The second phase of the application process is the submission of Part B by the applicant. Unless voluntarily submitted, Part B must be requested by the permitting authority and the applicant must be given six months to submit requested data.

Table 4

OUTLINE OF RCRA PERMIT DEVELOPMENT STEPS

1. Review Permit Application - Part A

   - Review the Part A for completeness
   - Request supplemental information as needed
   - Notify the Applicant that Part A is complete

2. Determine if a Permit is Needed

   - Generators and Transporters do not need a permit
   - Activity covered by a Permit-by-Rule
   - Excluded or delisted wastes

3. Request Part B of the Permit Application

   - Define applicable Part B requirements
   - Define site-specific information needs
   - Request Part B

4. Compile Background Information

   - Compile RCRA file information
   - Compile other file information (NPDES, UIC, PSD)
   - Compile state data
   - Compile reference material

5. Review Part B of the Permit Application

   - Review the Part B for completeness
   - Review background information for missing data
   - Request supplemental information as needed
   - Alternate - Conduct a facility inspection
   - Notify the Applicant that Part B is complete

6. Facility Inspection

   - When there is a history of environmental problems
   - When there is a history of non-compliance with interim status standards
   - When available information is inadequate to prepare a permit
   - When large amounts of acutely hazardous or toxic wastes are handled
   - When major land disposal or surface impoundment facilities are present
   - When a previous inspection indicates the need for a follow-up inspection

7. Determine If the Permit Should Be Denied

   - Inadequate facilities or practices
   - Major environmental problems
   - Violations of Interim Status Standards

8. Generator Review

   - Small generator exclusion clerk
   - Excluded or delisted waste check
   - Define Generator requirements
   - Notify Applicant if no permit is required

9. Transporter Review

   - Generator check
   - Define Transporter requirements

10. Define Storage Requirements

    - Wastes stored longer than 90 days
    - Specific permit conditions for container, tanks, surface impoundments, and waste piles

11. Define Treatment Requirements

    - Specific permit conditions for containers, tanks, surface impoundments, waste piles, and incinerators
    - Permits-by-Rule

12. Define Disposal Requirements

    - New facilities only

13. Define General Permit Conditions

    - Standard conditions for all facilities

14. Prepare a Complete Modular Permit

    - Prepare site-specific attachments
    - Compile all modules

15. Prepare a Statement of Basis or Permit Rationale

16. Prepare a Fact Sheet

There is no Part B application form. The data required vary by type of facility and are very detailed. Required data for each type of faciltiy are defined in 40 CFR 122.25. Prior to requesting the Part B, the permit writer should determine the specific data required for the facility. These requirements should be reviewed for adequacy as additional data may be needed for some complex facilities or unusual cases. It is easier to request supplemental data at this stage rather than after an incomplete application has been received.

Conversely, some required data may not be needed for simpler facilities. Waiver of certain data requirements may be possible upon request by the applicant.

Headquarters has provided guidance to the Regions for prioritizing facilities for permit processing. Part B requests should be submitted to applicants in priority order unless there are compelling circumstances to do otherwise.

COMPILE BACKGROUND INFORMATION

The permit writer has a variety of data and reference materials available to him that will assist in reviewing the Part B when received and in preparing permit conditions. The information is also useful in determining supplemental data needs prior to requesting Part B. These include RCRA file information such as interim status or uncontrolled site inspection reports, annual reports, information in other program files including NPDES, UIC, and sometimes PSD, and technical guidance or reference manuals. In the case of EPA permits, State files may contain additional data, especially if the State has its own hazardous waste permit program.

REVIEW PART B OF THE APPLICATION

When Part B is received, it must be reviewed for technical and administrative completeness within 30 days for new facilities and 60 days for exisitng facilities. The applicant is then notified that Part B is complete

or supplemental information is requested. A facility inspection may be necessary in some cases to verify data or compile supplemental information.

The adequacy of Part B data is a key to efficient preparation of a comprehensive permit. Thorough review of the Part B at this stage is thus very important. A lengthy checklist to assist the permit writer in this review is presented in Appendix A-5 of the RCRA Permit Procedures Manual

The Part B data should be compared to the background information and discrepancies noted. In some cases, the background data may adequately supply missing Part B information and a supplemental request would not be needed.

INSPECT THE FACILITY

There are several factors that would indicate the need to inspect the facility prior to permit development. These are listed in Table 4 and shown in Figure 1. If a facility has been inspected, there may still be a need for a follow-up inspection if the previous inspection did not include observation or documentation of critical activities or data.

As in the case of the NPDES program, resources are not adequate to allow permitting inspection of all facilities. It may be feasible to obtain the necessary information as part of an NPDES compliance inspection or a State inspection if information needs are communicated to these inspectors. Aerial photographs can also yield very useful information on many facilities.

DETERMINE IF THE PERMIT SHOULD BE DENIED

For a minority of facilities, the background and application data and/or inspection observations may indicate that the facility is a poor operation which cannot be satisfactorily improved and/or a major environmental hazard. Denial of the permit which causes the facility to terminate operation may be the desired course of action in such cases.

GENERATOR REVIEW [Figure 2]

A majority of hazardous waste management facilities are generators of hazardous waste. Generators which do not conduct any other hazardous waste management activities are subject to Part 262 regulations but are not required to obtain a permit. A generator may also not be required to get a permit even if other activities are conducted if these activities meet certain requirements. These include storage of wastes for less than 90 days, generation of waste volumes less than specified amounts, onsite disposal of small volumes of waste in State licensed solid waste disposal facilities, and various other exclusions. Exclusion or delisting of a hazardous waste by recent revision of Part 261 regulations may also result in a facility no longer requiring a permit.

The application data should be carefully reviewed against Figure 2 and the latest lists of hazardous wastes established in Part 261 regulations to determine if the facility may be excluded from permit requirements. Figure 2 contains references to specific regulations at each decision box to assist the permit writer in correctly evaluating potential exclusions.

TRANSPORTER REVIEW [Figure 3]

Transporters of hazardous wastes are subject to Part 263 regulations but do not require a permit unless they also treat, store, or dispose of hazardous wastes. As shown in Figure 3, they may also be a generator subject to Part 262 regulations if they mix hazardous wastes in the same container. Such a facility should then be subjected to the Generator review [Figure 2].

DETERMINE APPLICABLE STORAGE, TREATMENT AND DISPOSAL STANDARDS [Figure 4]

Once the above procedural steps have been accomplished, the permit writer is ready to procede with development of permit conditions specific to the facility. This requires determining which Part 264 permit standards apply. This can be accomplished in a general sense by reviewing Figure 4

and then reviewing Figures 5 through 9 as appropriate to determine specific standards.

Permit standards in effect at the time of manual preparation covered new and exisitng facilities using containers, tanks, surface impoundments, and/or waste piles for storage or treatment of hazardous wastes, new and exisiting incinerators treating hazardous wastes and new landfills. This manual does not cover landfill standards because they are not easily adapted to this method of presentation. Figure 4 defines the standards presented in this manual.

Figures 5 through 9 are designed to be used with the sections of the Sample Modular Permit in Section VI that contains standard conditions for specific types of treatment or storage facilities. By following applicable paths of the flow chart, the permit writer receives instructions which guide him through the development of permit conditions. It is suggested that the permit writer skip ahead to Section VI and read the procedures for using modular permits before reading the material below for the first time. In this manner, a better understanding of the application of these flow charts can be obtained.

CONTAINER STORAGE STANDARDS [Figure 5]

Figure 5 outlines procedures for developing permit conditions for container storage facilities. It should be used with the Standard Conditions for Container Facilities segment of the modular permit in Section VI. An example of the use of Figure 5 follows.

Beginning at the top Start block, the permit writer follows the arrows downward, branching at each diamond-shaped decision block as specific conditions dictate. If wastes are not stored more than 90 days, no storage requirements are involved and a return to the treatment segment of Figure 4 is indicated. If wastes are stored for a longer period, a determination is made if this storage is in containers. If so, the permit writer is instructed to review the Part B information on the containment system. This

information in compared to the design requirements contained in 40 CFR 264.175(a). These design requirements are described in Condition C-5 of the Standard Conditions for containers in the Modular Permit in Section VI. This reference is indicated by the C-5 in larger type to the right of the design decision box.

If the design is inadequate, the permit writer is faced with a decision on whether to require the facility to be improved or deny the permit. This decision would usually be based on the feasibility of upgrading the containment system. If improvements are feasible, two approaches are possible. The effective date of the permit might be delayed and the facility continued in interim status until improvements are made or a compliance schedule could be established in the permit to require the improvements to be completed by a specified date.

The permit writer now determines if run-on of surface runoff from adjacent areas into the containment system is prevented as required by 264.175(b) and condition C-6 of the Modular Permit. If not, the capacity of the containment system must be evaluated. If excess cpacity is sufficient, the run-on prohibition may be waived. This is accomplished by a specific condition in the Other Requirements section of the Modular Permit. (See condition 1 for an example.)

In the same manner, the permit writer proceeds through the remainder of Figure 5, reviewing appropriate application data and documents and preparing tabular material and specific permit conditions that are site-specific as directed by the flow chart and the standard permit conditions.

TANK STORAGE OR TREATMENT STANDARDS [Figure 6]

Figure 6 provides guidance to the permit writer in the development of permit conditions for tank storage or treatment facilities. It is used in the same manner as Figure 5 for containers and is used with the Modular Permit.

SURFACE IMPOUNDMENT STORAGE OR TREATMENT STANDARDS [Figure 7]

Permit conditions for surface impoundments used for storage or treatment of hazardous wastes may be developed using Figure 7 and the Modular Permit. These procedures cannot be used to develop permit conditions for surface impoundments used for disposal as Permit Standards for such facilities have not been promulgated.

WASTE PILE STORAGE OR TREATMENT STANDARDS [Figure 8]

Permit conditions for waste piles may be developed using Figure 8. The same restrictions as for surface impoundments apply.

INCINERATOR STANDARDS [Figure 9]

Figure 9 can be used to assist the permit writer in developing permit conditions for incinerators, determining when a waiver from most permit conditions can be granted when only ignitable wastes are burned and developing trial burn permit conditions.

At the time of manual preparation the sample permit conditions for incinerators were undergoing revision. The sample conditions presented in Section VI are not in the same modular format as for other types of facilities. Consequently, Figure 9 does not contain specific references to sample permit conditions.

Figure 9 is based on both promulgated and proposed incinerator regulations. References to hazardous combustion by-products, more or less stringent performance standards, and performance standards for metals and halogens refer to proposed regulations. The permit writer is cautioned to determine the current status and form of regulations on these aspects of the incinerator standards before applying Figure 9.

DEFINE GENERAL PERMIT CONDITIONS

The Consolidated Permit Regulations require the various permit conditions concerning inspections, contingency plans, training, security, etc. be included in permits for all types of facilities. Examples of appropriate general permit conditions are not presented in Section VI but can be obtained from Part II of the RCRA Permit Procedures Manual.

PREPARE A COMPLETE MODULAR PERMIT

As descussed in Section VI, a complete modular permit contains several pages of site specific information in addition to the General Conditions, Standard Conditions for specific types of facilities, and Other Requirements. These permit components should be prepared at this time. The various modules can now be compiled into a complete permit.

PREPARE A STATEMENT OF BASIS OR PERMIT RATIONALE

The permit writer's job is not complete until he has documented the basis for all conditions in the permit. This should be complete and adequately detailed so that no questions remain as to the justification and/or authority for each condition. This both assists in the defense of the permit if necessary and provides major assistance to subsequent permit writers when the permit is reissued years later.

PREPARE A FACT SHEET

The last step required by the Consolidated Permit Regulations prior to placing the draft permit on public notice is to prepare a Fact Sheet.

FIGURE 1

BASIC RCRA PERMIT PROCEDURES

FIGURE 1

FLOW CHART OF BASIC RCRA PERMIT DEVELOPMENT PROCESS

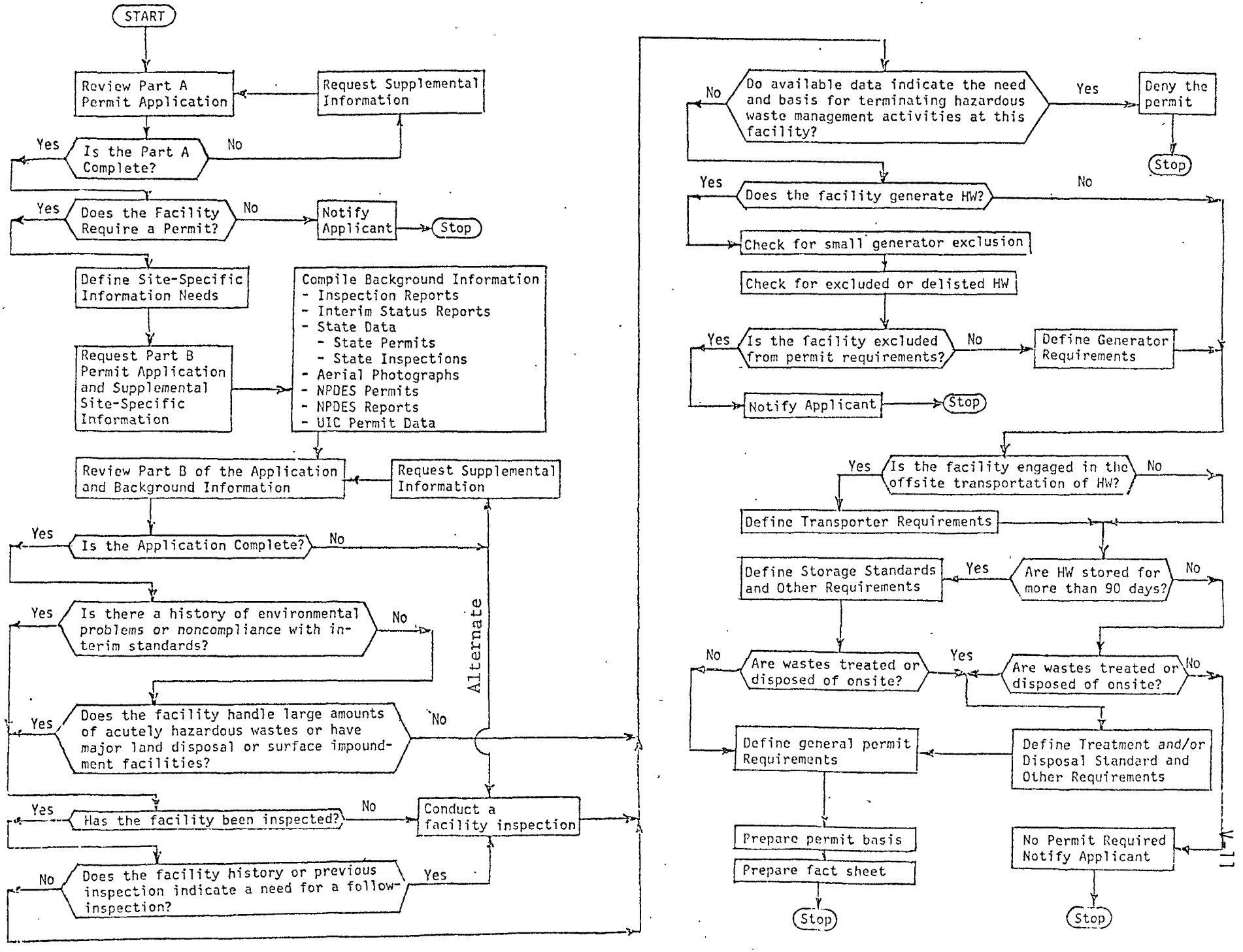


FIGURE 2

GENERATOR REVIEW

FIGURE 2
FLOW CHART OF GENERATOR REVIEW STEPS

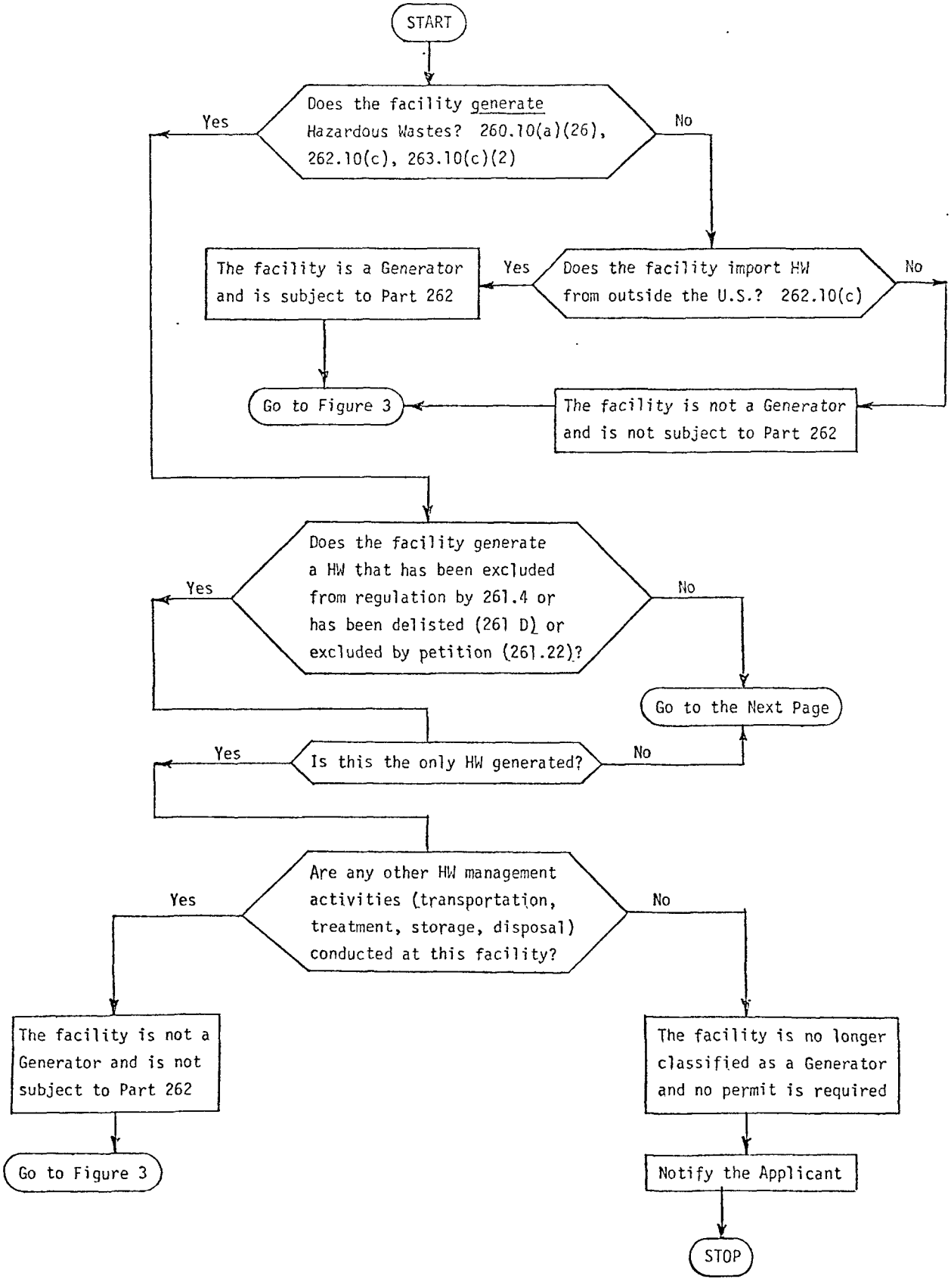
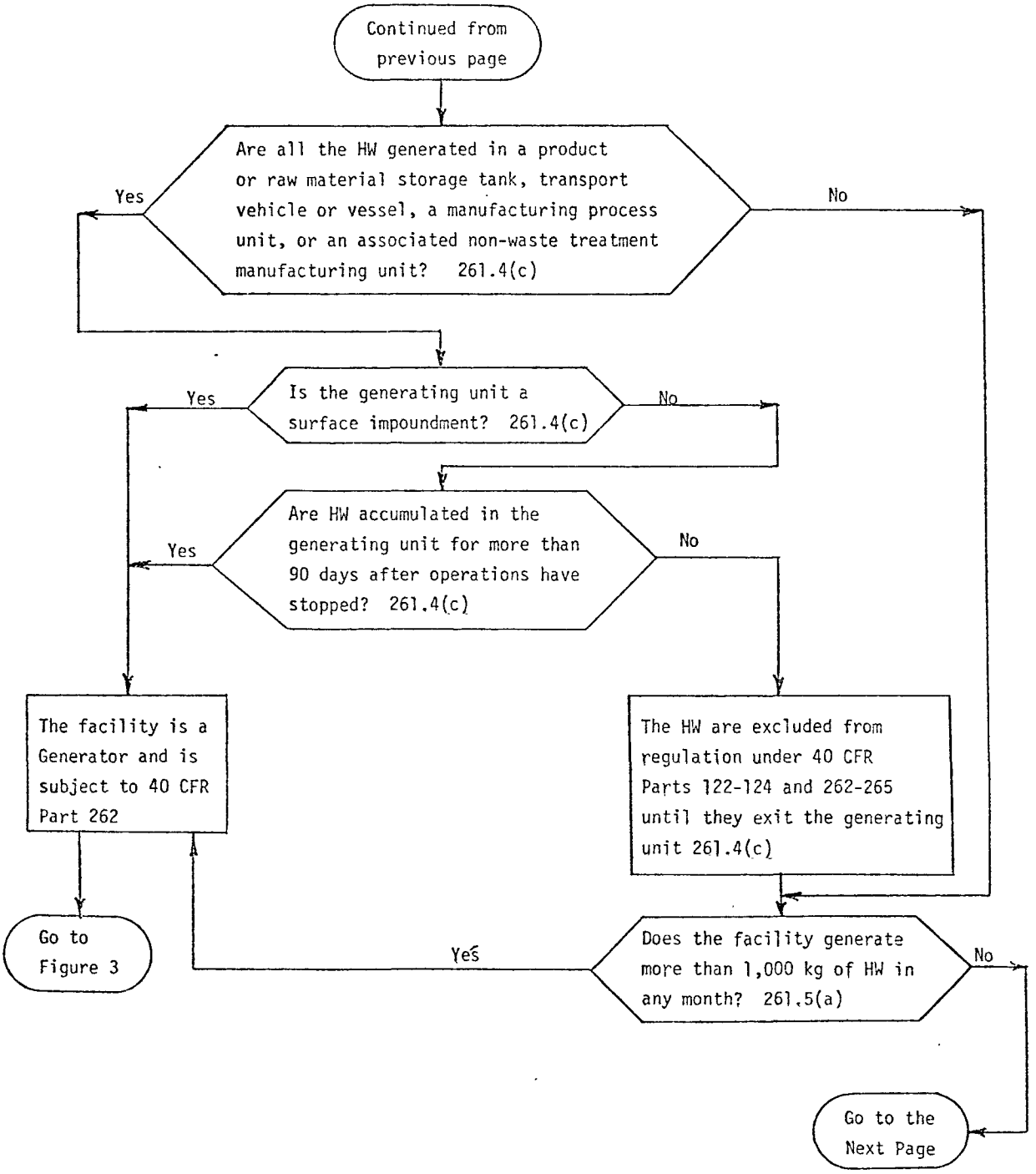


FIGURE 2 (Cont.)



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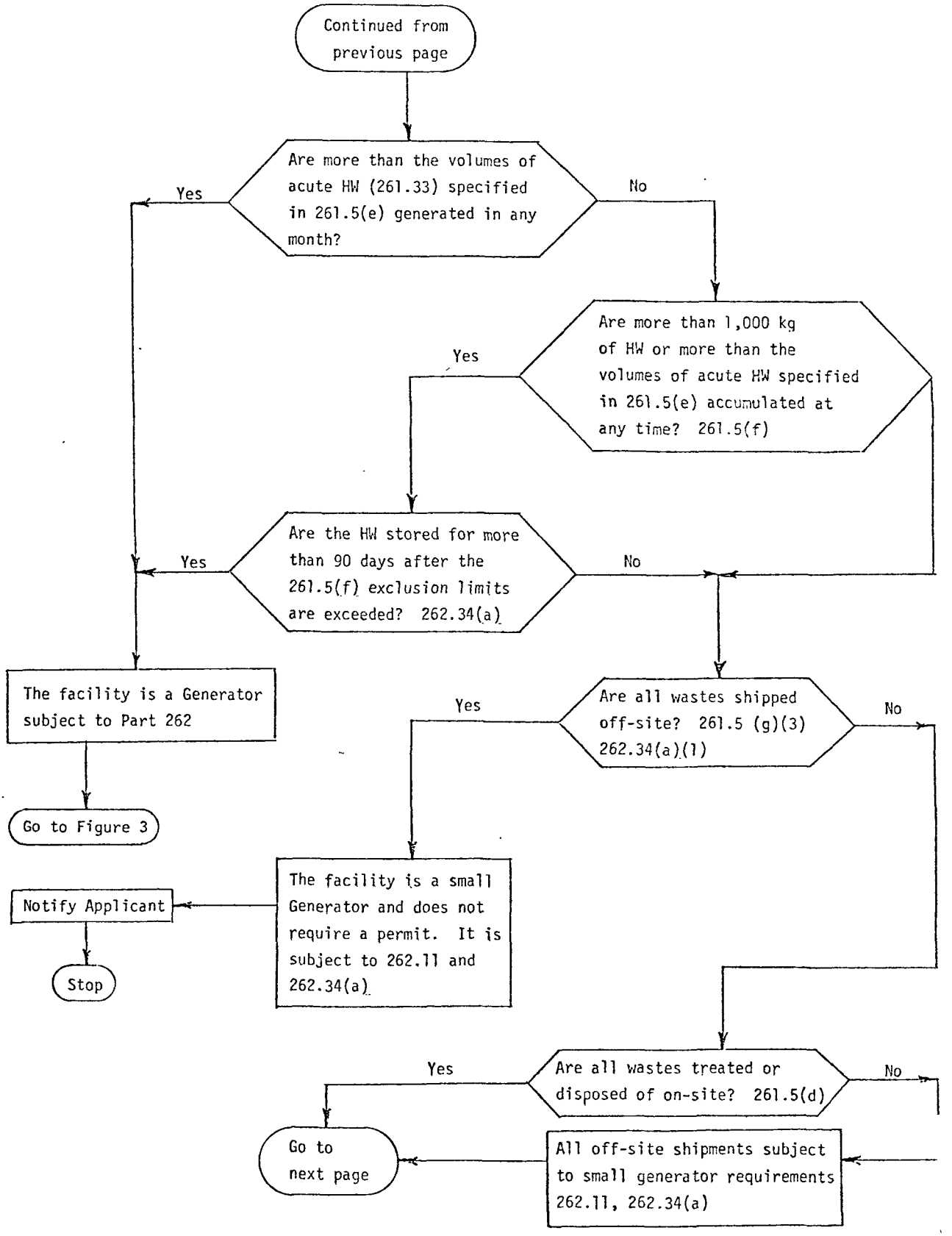

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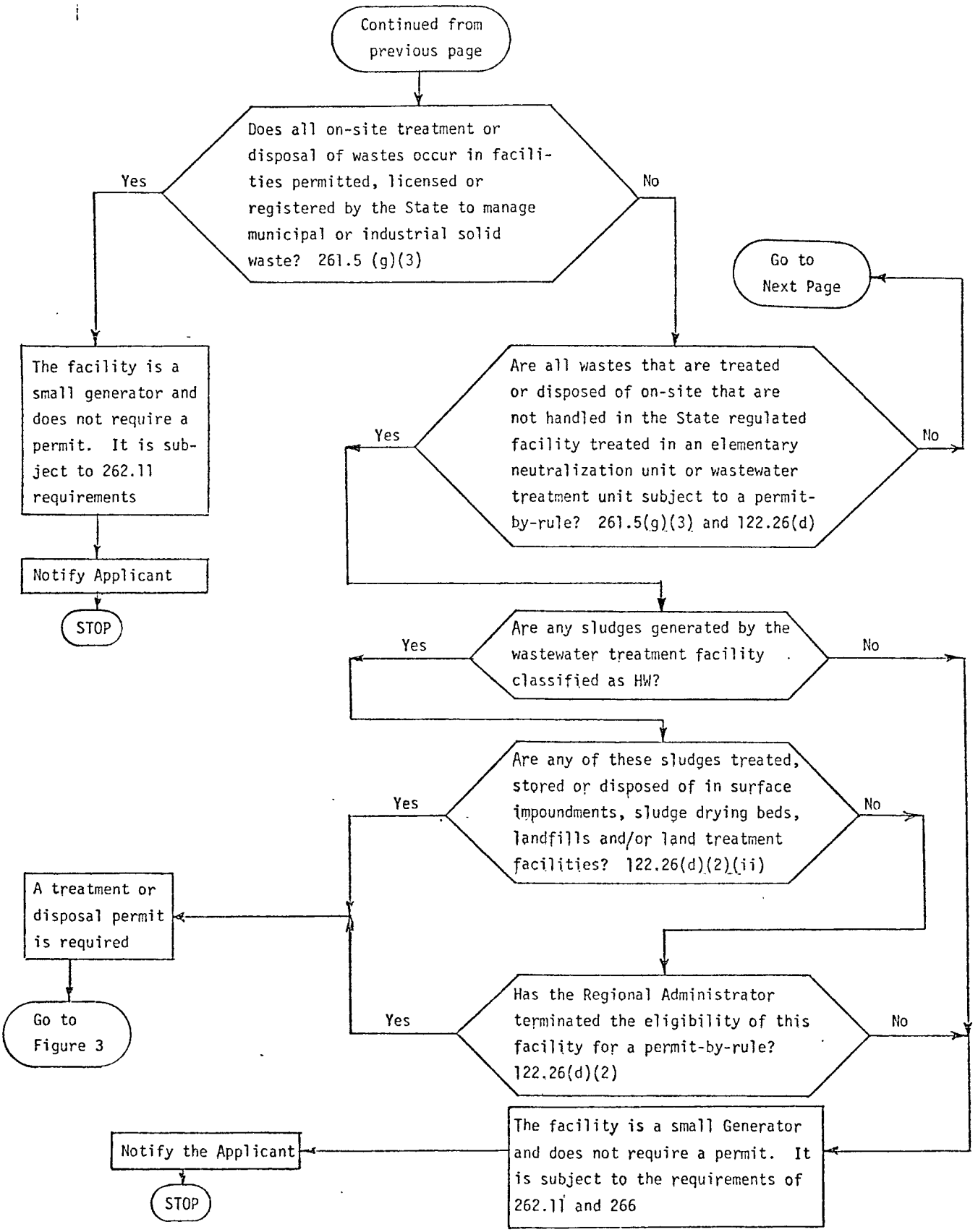

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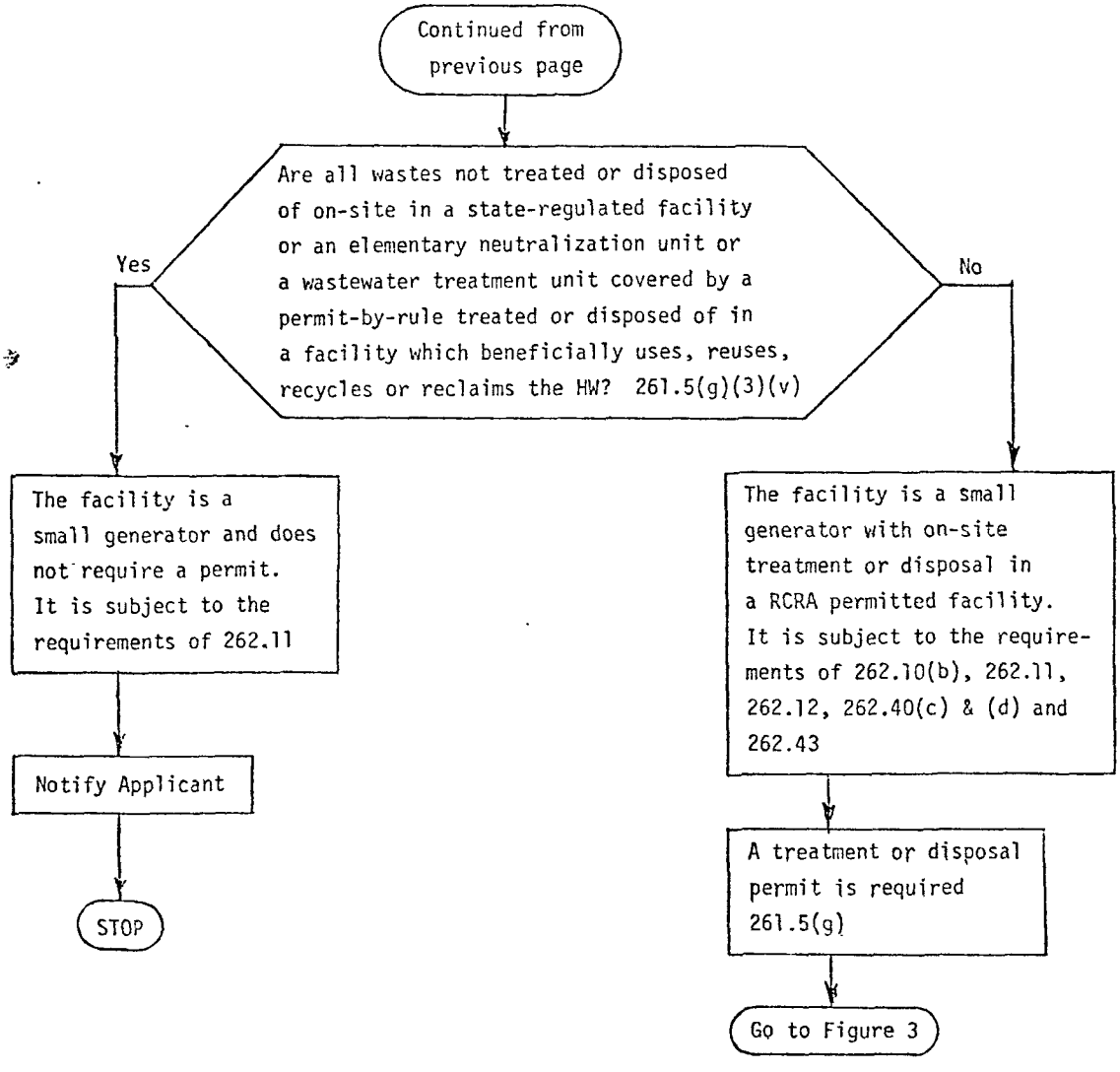


FIGURE 3

TRANSPORTER REVIEW

FIGURE 3

FLOW CHART OF TRANSPORTER REVIEW STEPS

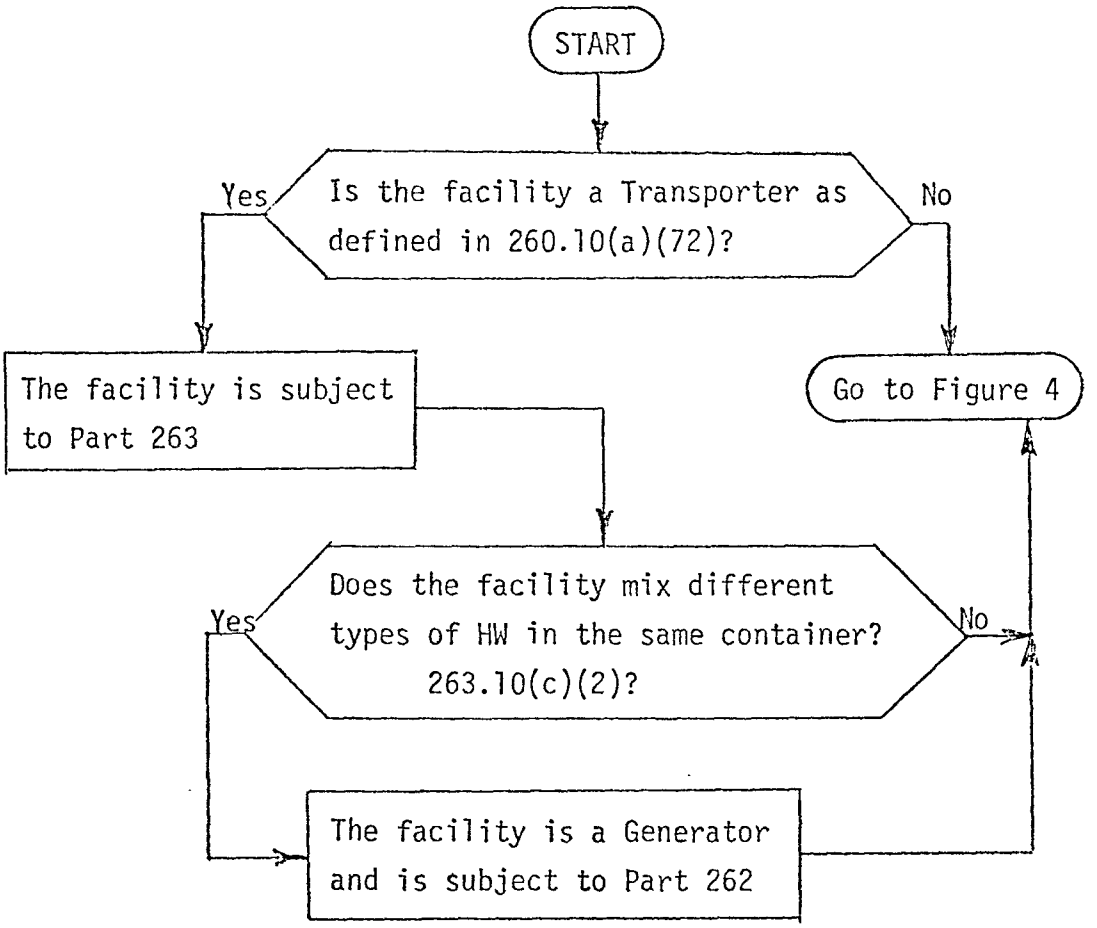


FIGURE 4

APPLICABLE STORAGE AND TREATMENT STANDARDS

FIGURE 4
FLOW CHART OF APPLICABLE STORAGE AND TREATMENT STANDARDS

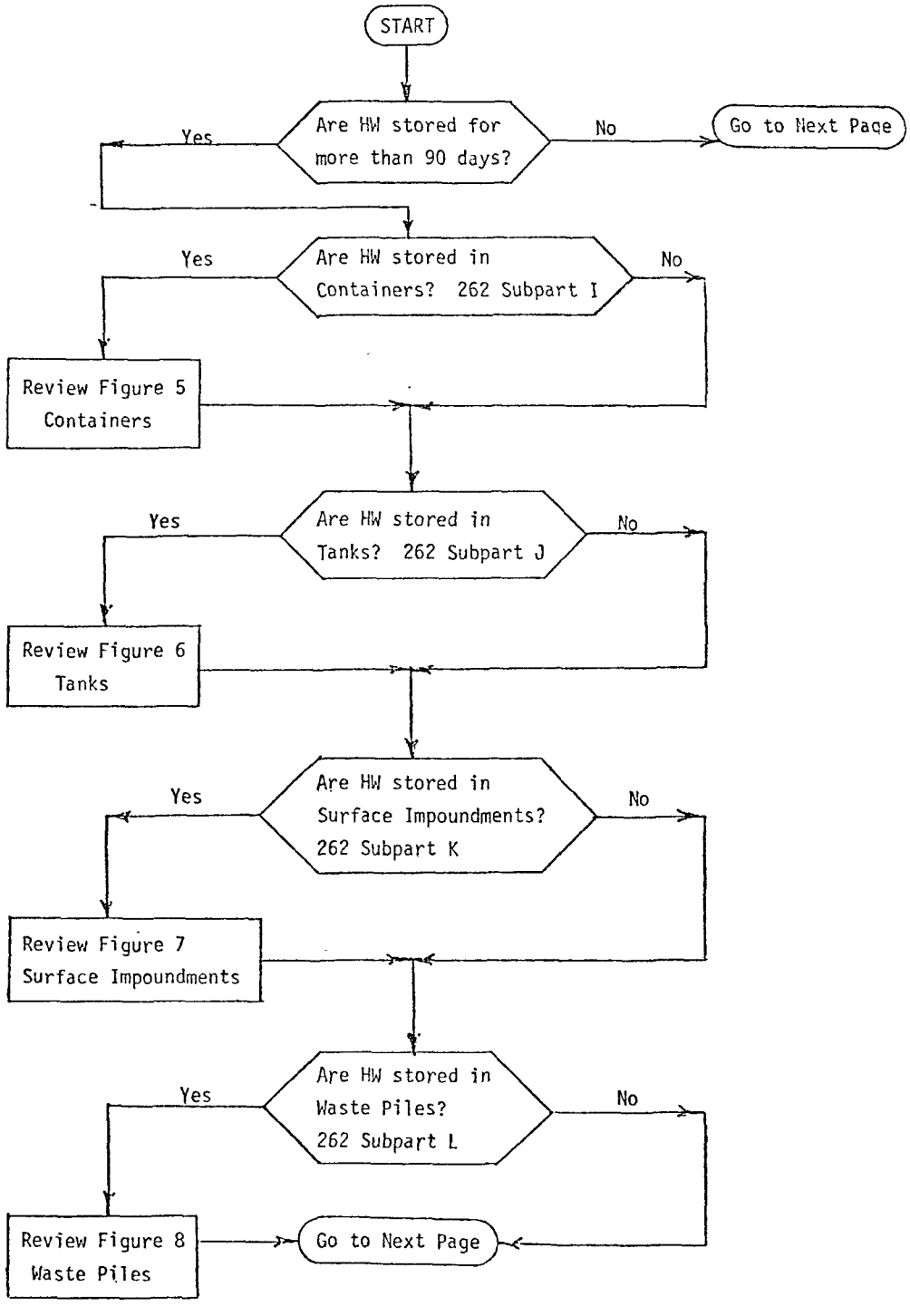


FIGURE 4 (Contd)

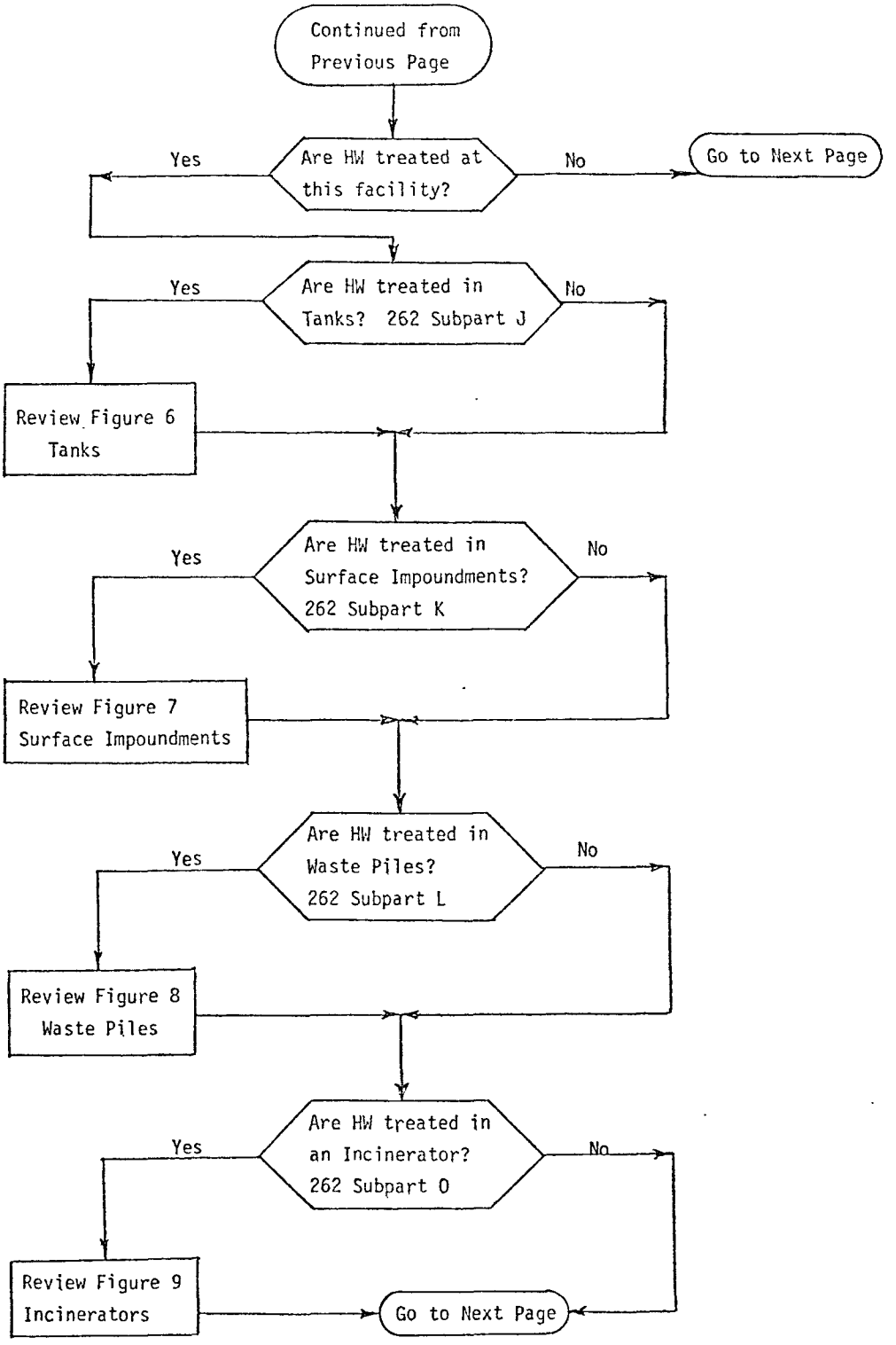


FIGURE 4 (Contd)

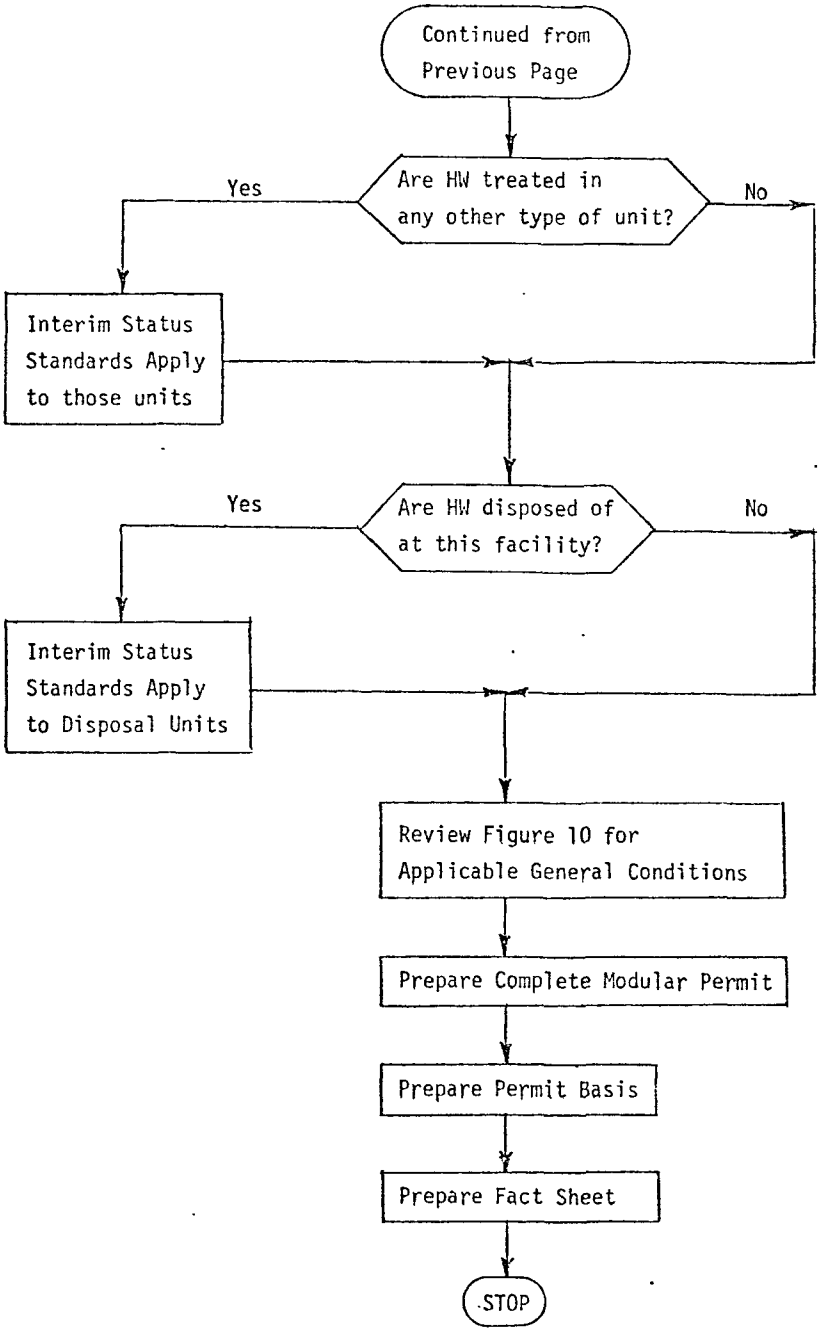


FIGURE 5
CONTAINER STORAGE

FIGURE 5

FLOW CHART OF CONTAINER STORAGE PERMIT DEVELOPMENT STEPS

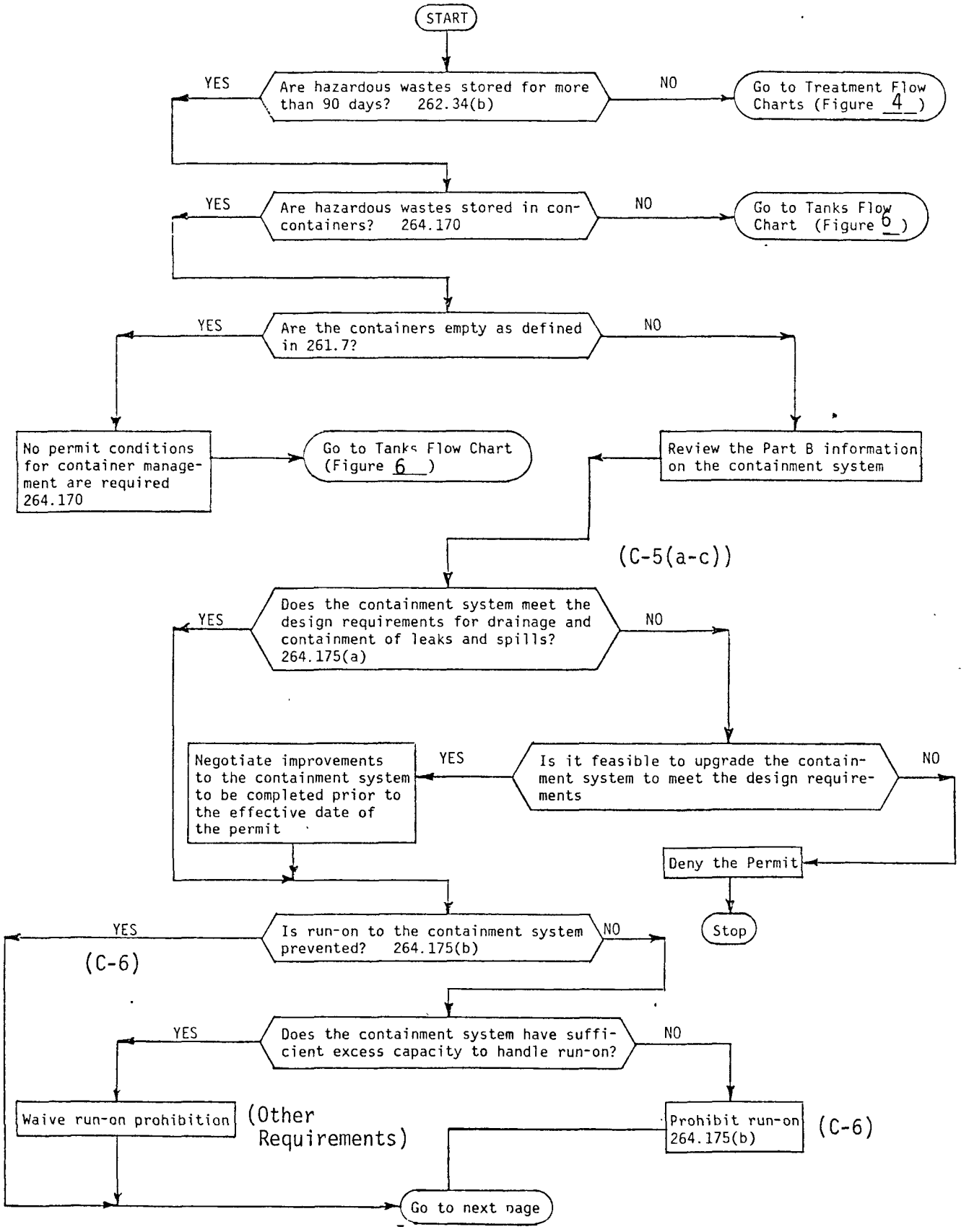


FIGURE 5 (CON'T.)

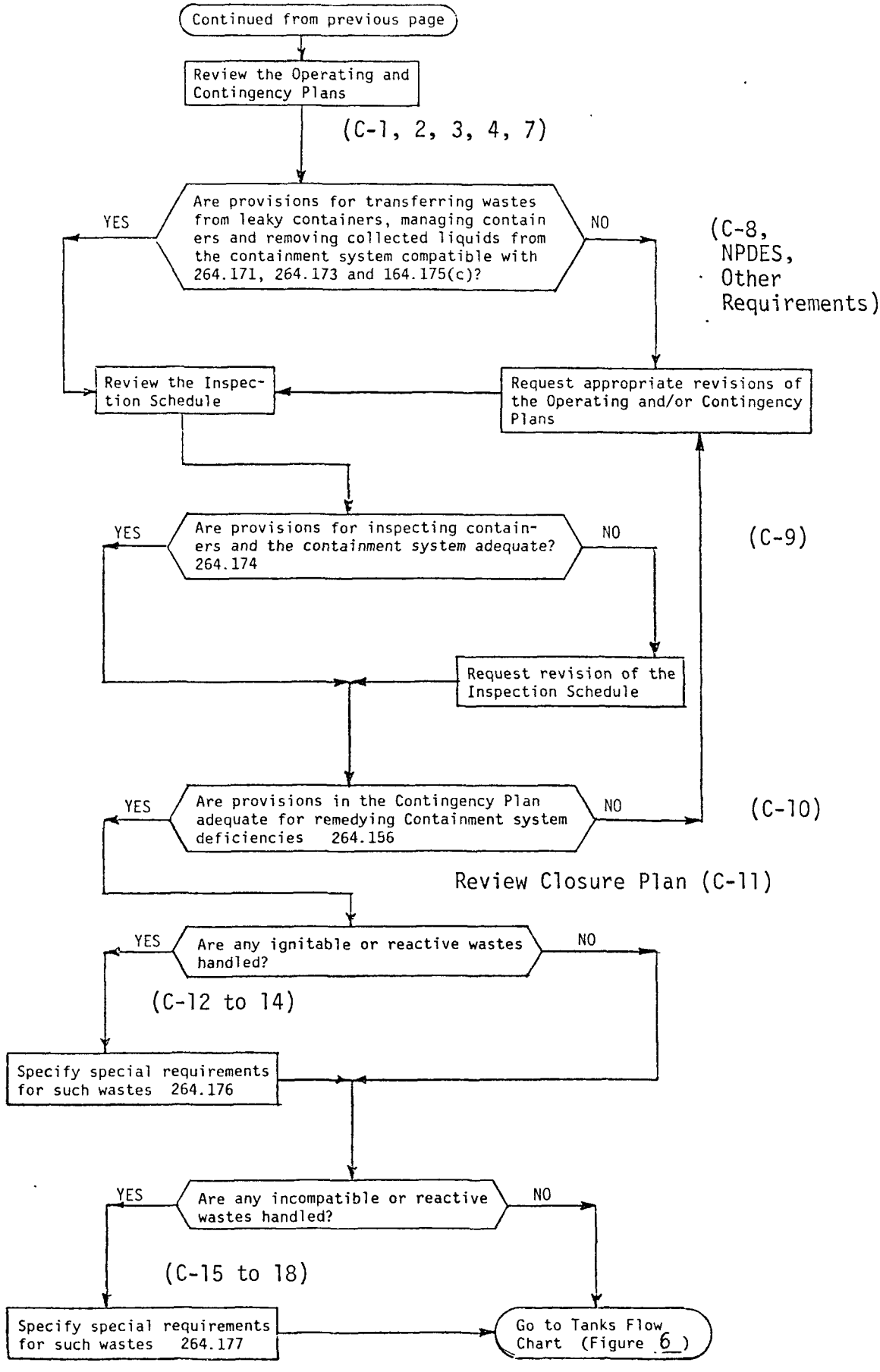
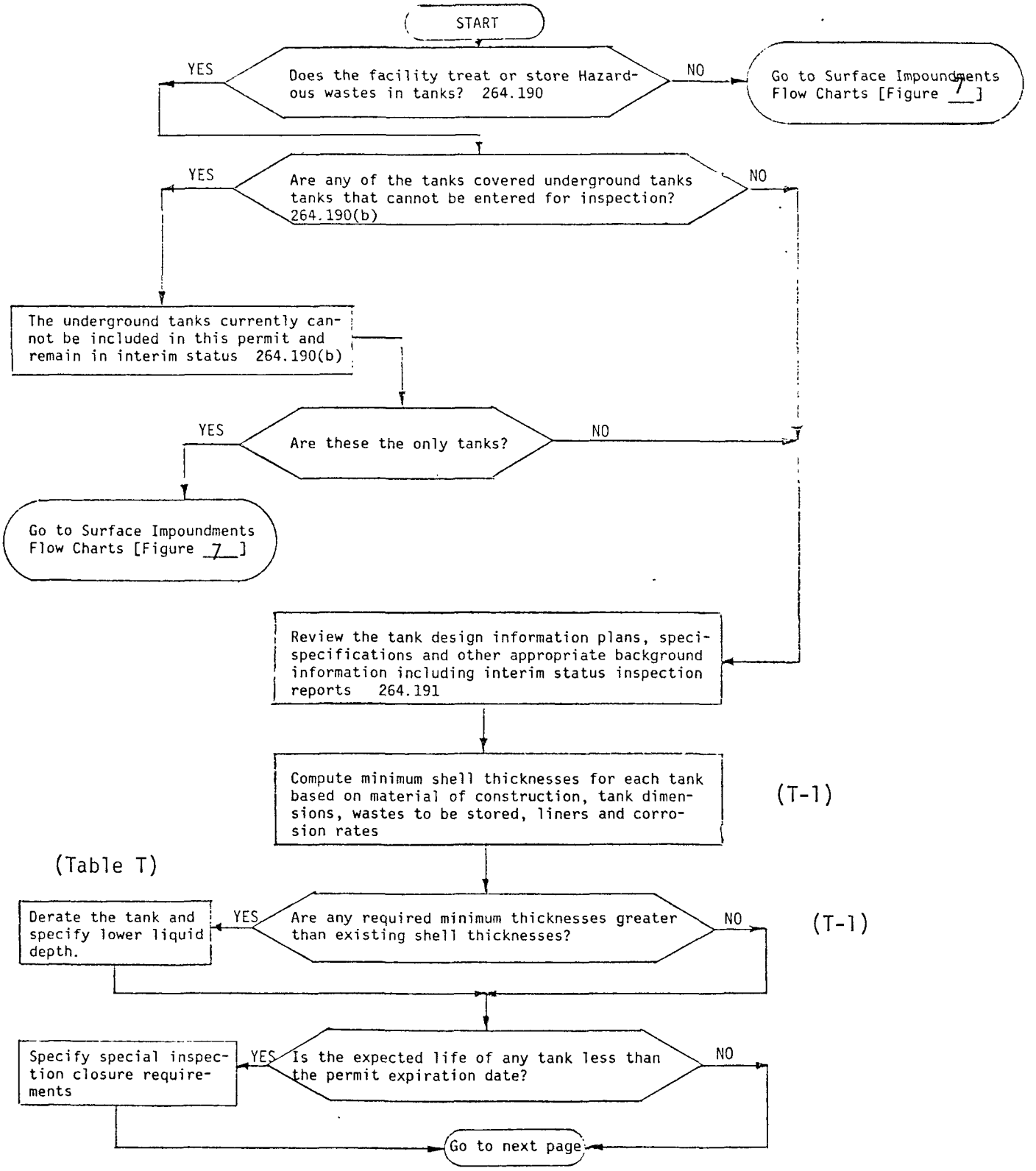


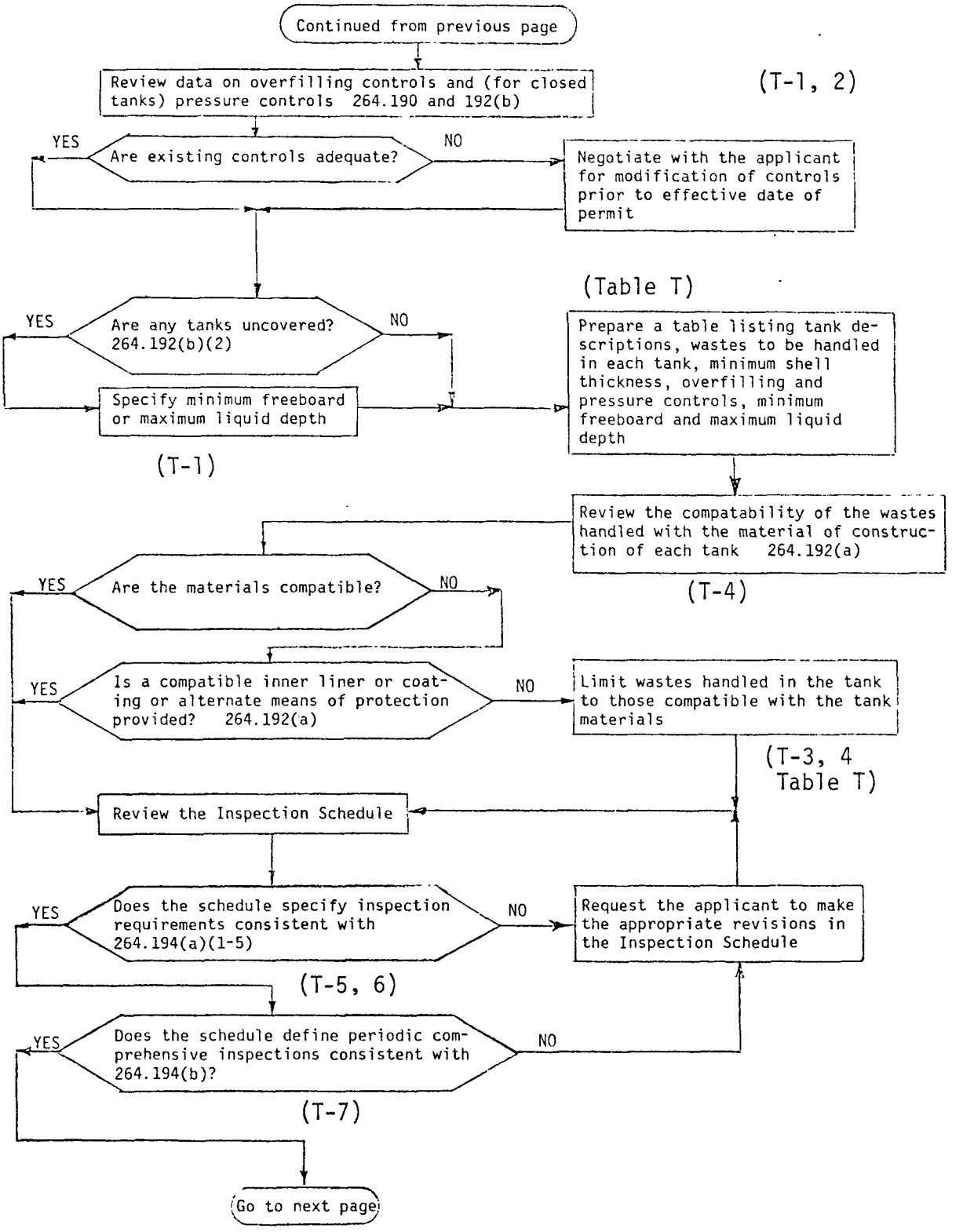
FIGURE 6

TANKS STORAGE

FIGURE 6

FLOW CHARTS OF TANKS STORAGE PERMIT DEVELOPMENT STEPS




Continued from previous page
Review data on overfilling controls and (for closed tanks) pressure controls 264.190 and 192(b)
(T-1, 2)
YES
Are existing controls adequate?
NO
Negotiate with the applicant for modification of controls prior to effective date of permit
(Table T)
YES
Are any tanks uncovered? 264.192(b)(2)
NO
Specify minimum freeboard or maximum liquid depth
(T-1)
Prepare a table listing tank descriptions, wastes to be handled in each tank, minimum shell thickness, overfilling and pressure controls, minimum freeboard and maximum liquid depth
Review the compatability of the wastes handled with the material of construction of each tank 264.192(a)
(T-4)
YES
Are the materials compatible?
NO
YES
Is a compatible inner liner or coating or alternate means of protection provided? 264.192(a)
NO
Limit wastes handled in the tank to those compatible with the tank materials
(T-3, 4 Table T)
Review the Inspection Schedule
YES
Does the schedule specify inspection requirements consistent with 264.194(a)(1-5)
NO
Request the applicant to make the appropriate revisions in the Inspection Schedule
(T-5, 6)
YES
Does the schedule define periodic comprehensive inspections consistent with 264.194(b)?
NO
(T-7)
Go to next page

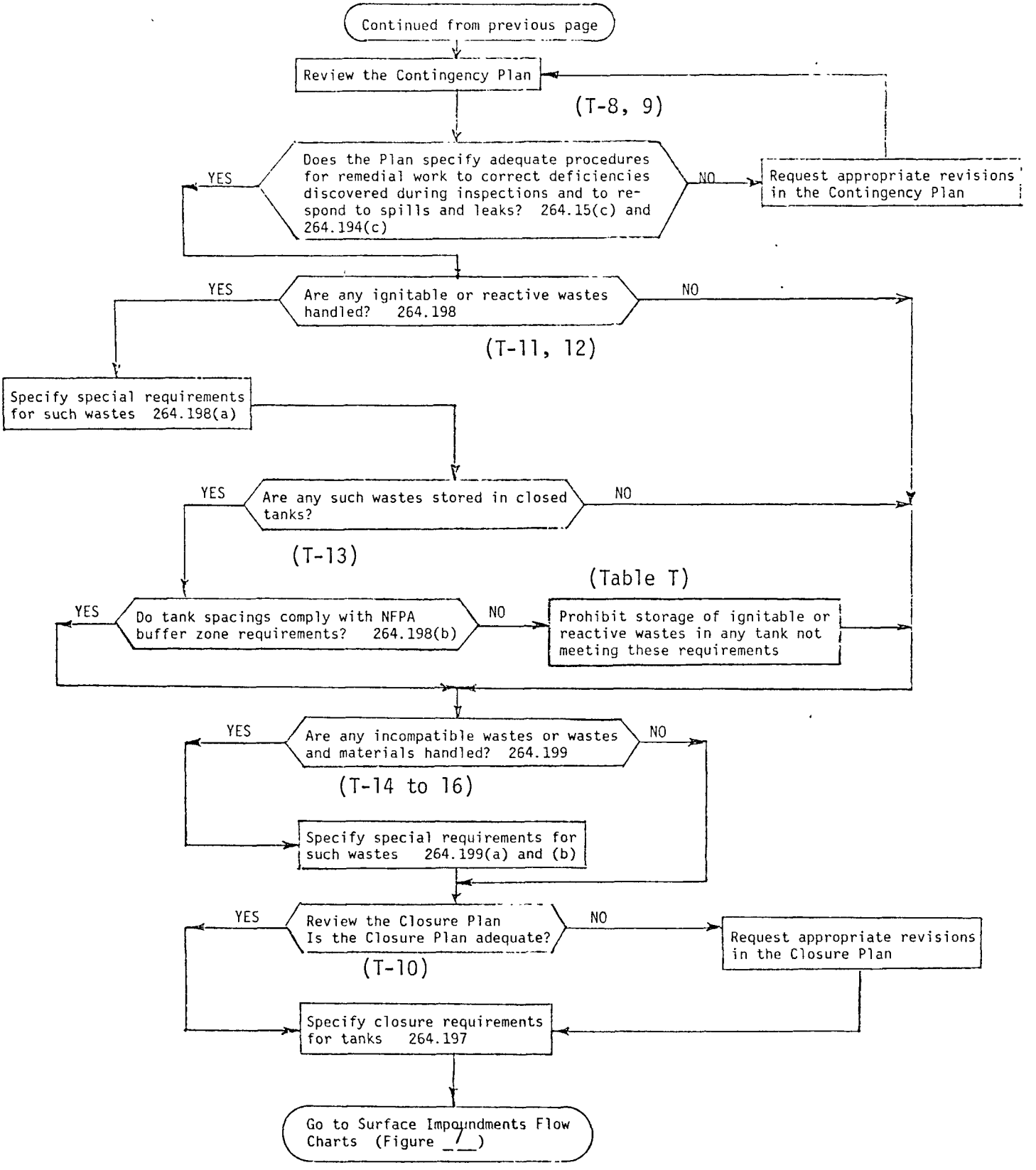

Continued from previous page
Review the Contingency Plan
(T-8, 9)
Does the Plan specify adequate procedures for remedial work to correct deficiencies discovered during inspections and to respond to spills and leaks? 264.15(c) and 264.194(c)
YES
NO
Request appropriate revisions in the Contingency Plan
Are any ignitable or reactive wastes handled? 264.198
YES
NO
(T-11, 12)
Specify special requirements for such wastes 264.198(a)
Are any such wastes stored in closed tanks?
YES
NO
(T-13)
(Table T)
Do tank spacings comply with NFPA buffer zone requirements? 264.198(b)
YES
NO
Prohibit storage of ignitable or reactive wastes in any tank not meeting these requirements
Are any incompatible wastes or wastes and materials handled? 264.199
YES
NO
(T-14 to 16)
Specify special requirements for such wastes 264.199(a) and (b)
Review the Closure Plan
Is the Closure Plan adequate?
YES
NO
(T-10)
Request appropriate revisions in the Closure Plan
Specify closure requirements for tanks 264.197
Go to Surface Impoundments Flow Charts (Figure __)

FIGURE 7
SURFACE IMPOUNDMENTS

Figure 7

FLOW CHART OF SURFACE IMPOUNDMENT PERMIT DEVELOPMENT STEPS

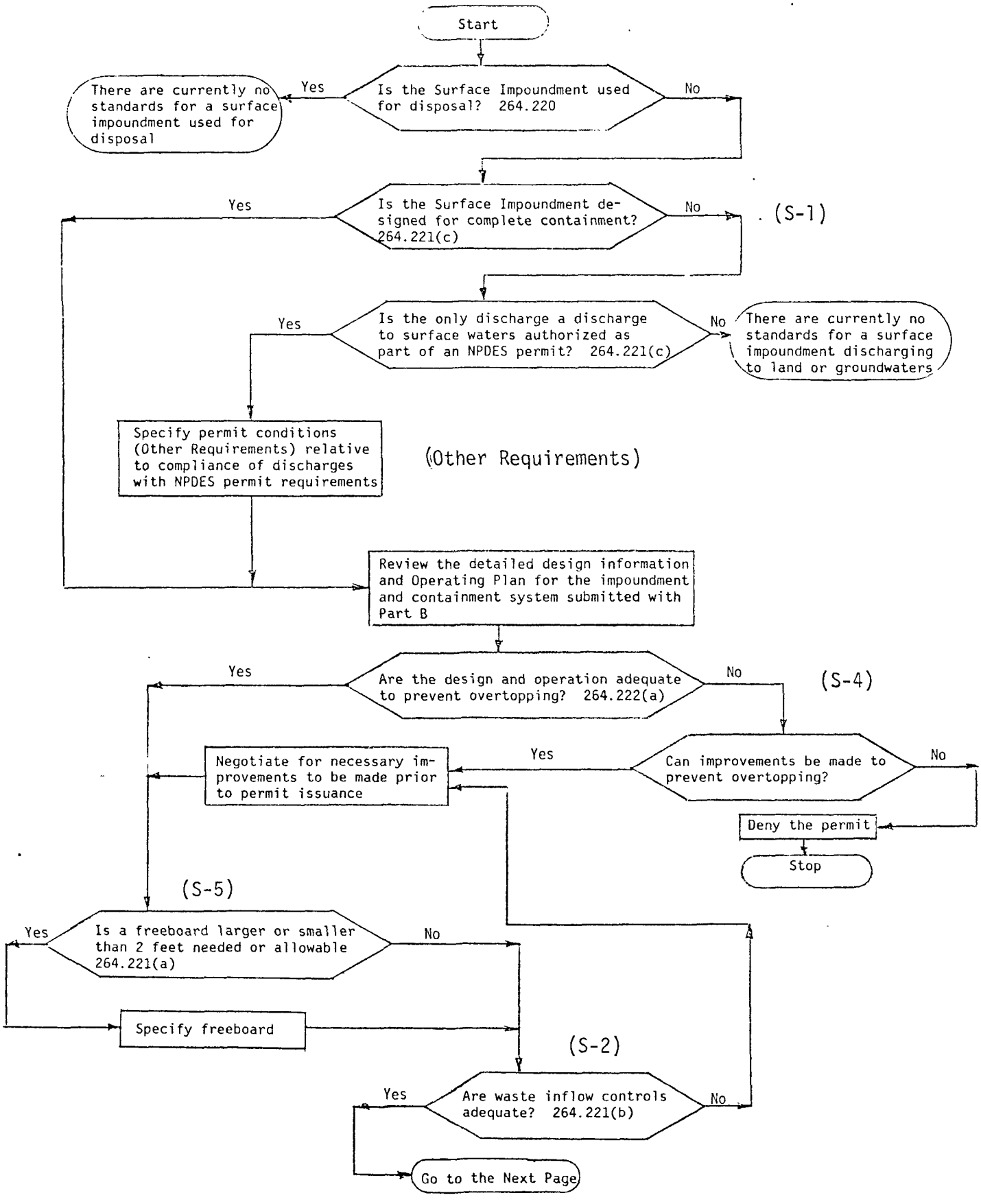


Figure 7 (Continued)

FLOW CHART OF SURFACE IMPOUNDMENT PERMIT DEVELOPMENT STEPS

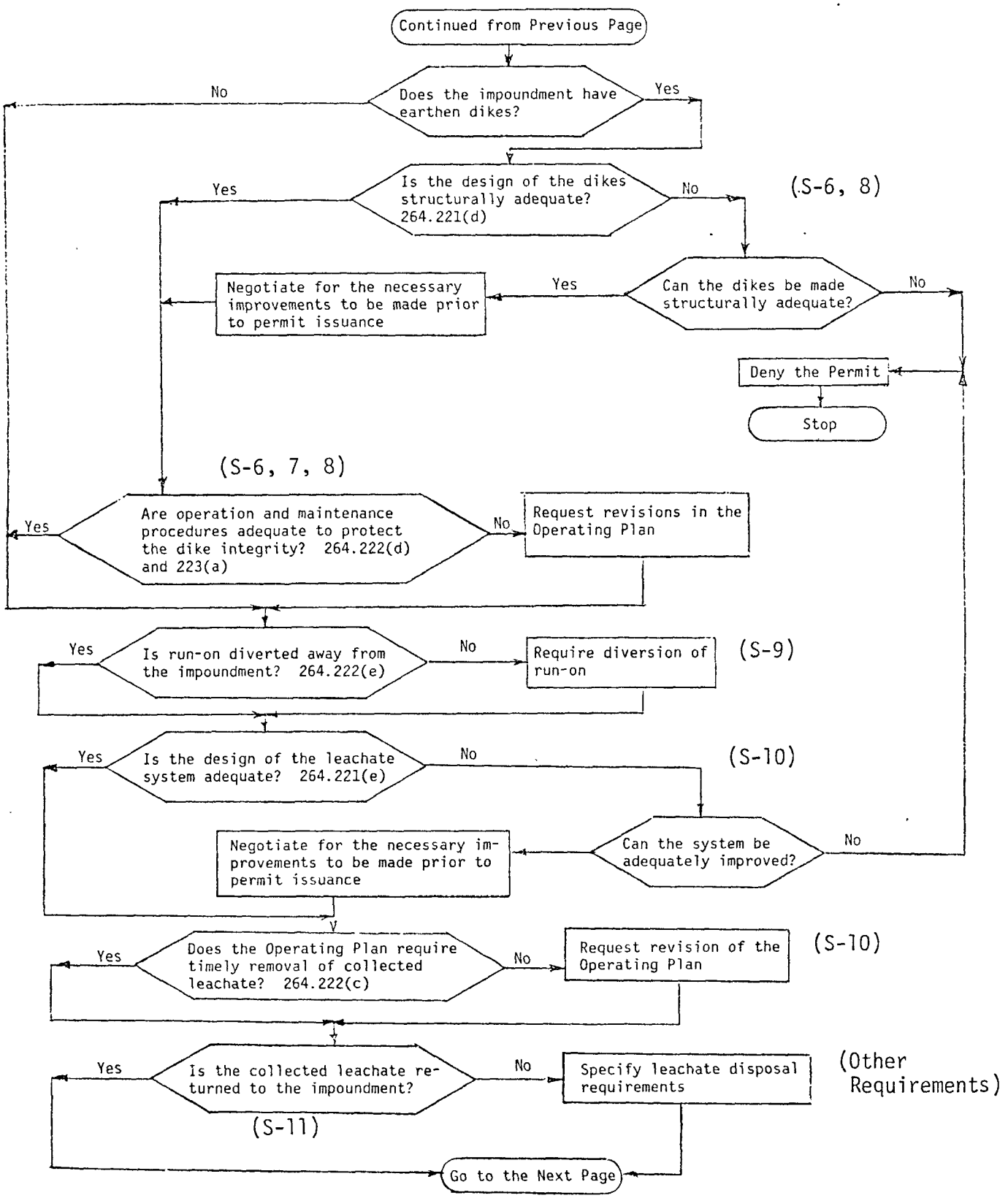


Figure 7. (Continued)
FLOW CHART OF SURFACE IMPOUNDMENT PERMIT DEVELOPMENT STEPS

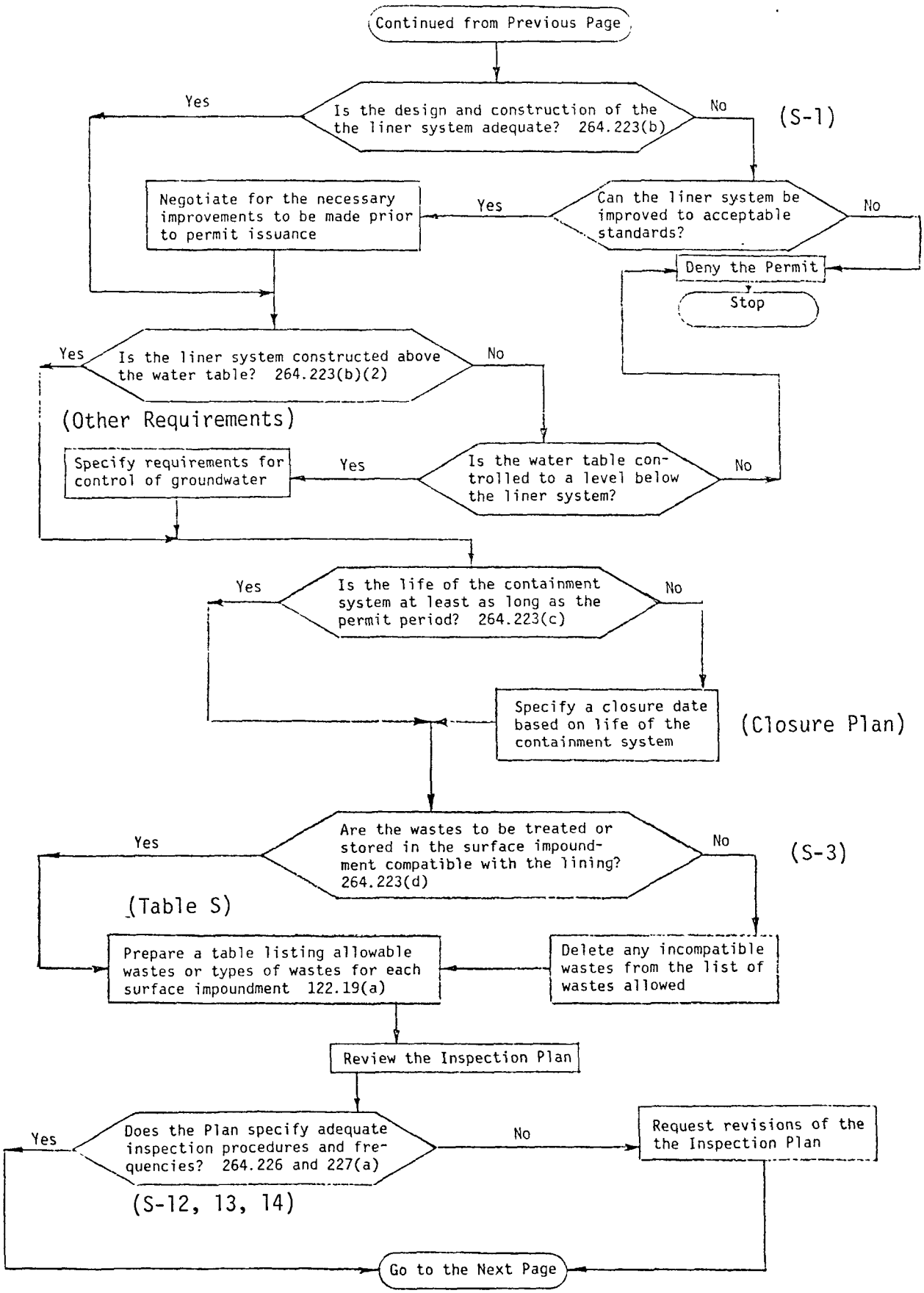


Figure 7 (Continued)

FLOW CHART OF SURFACE IMPOUNDMENT PERMIT DEVELOPMENT STEPS

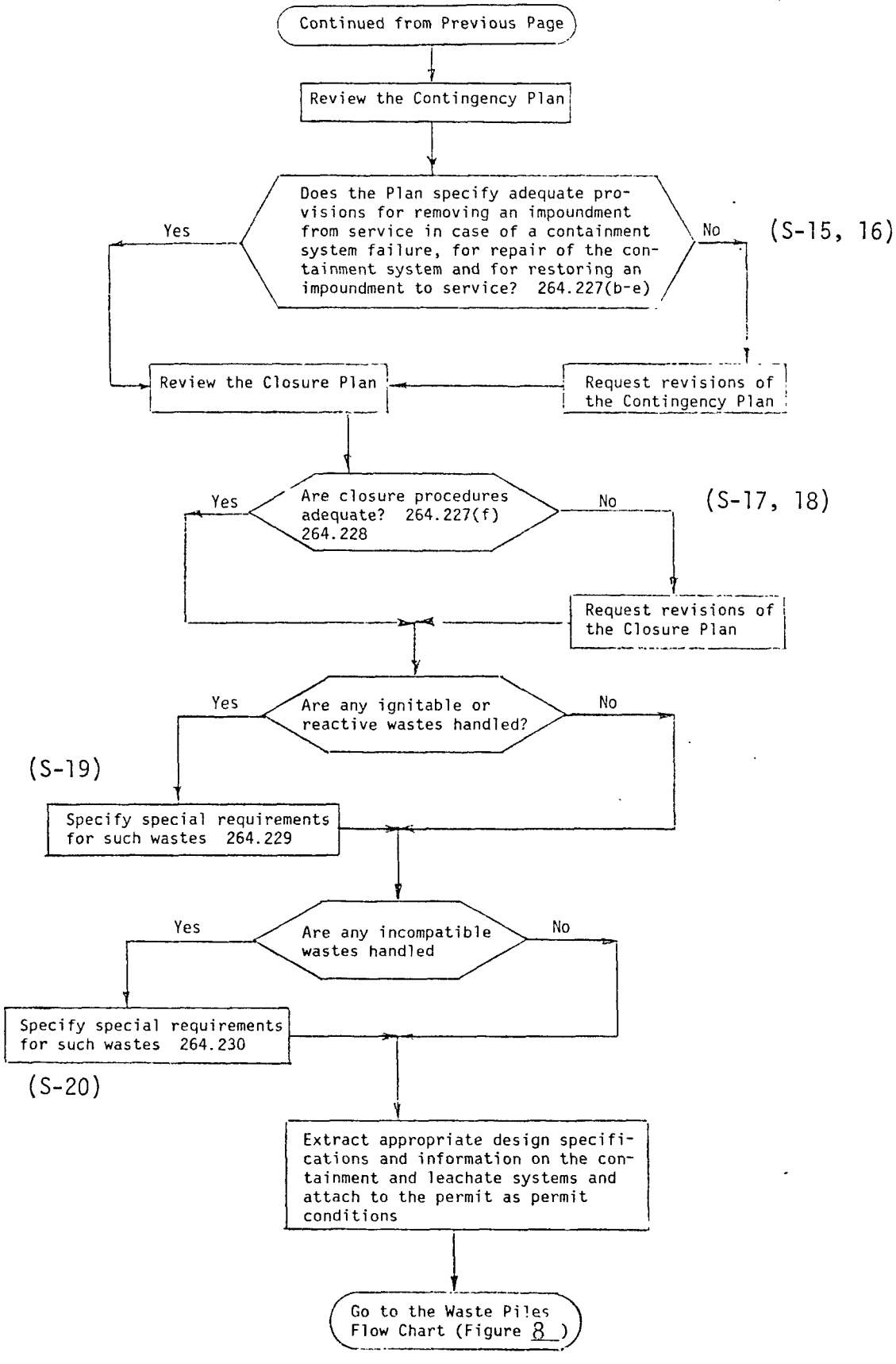


FIGURE 8
WASTE PILES

Figure 8.
FLOW CHART OF WASTE PILES PERMIT DEVELOPMENT STEPS

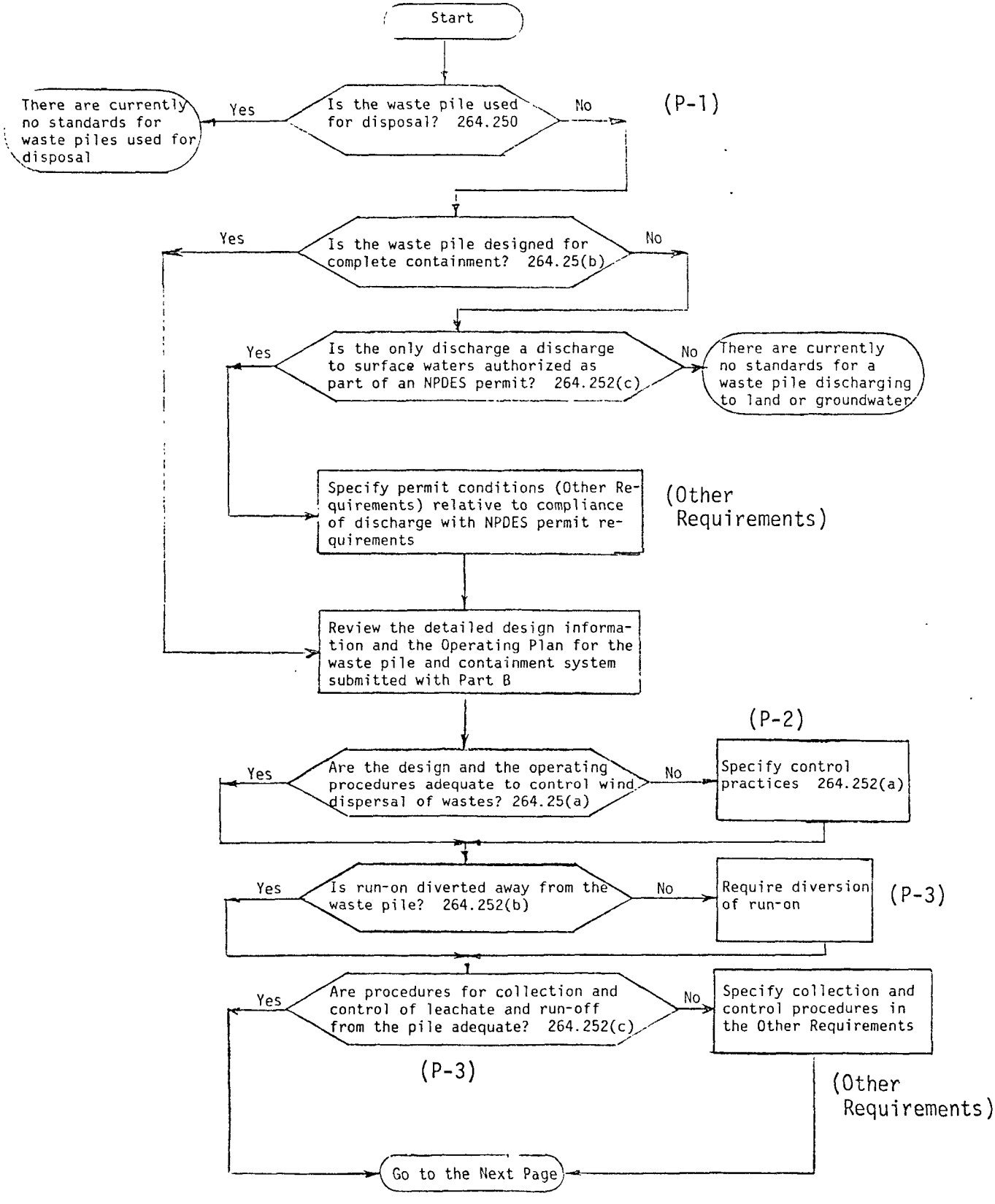


Figure 8 (Cont.)
FLOW CHART OF WASTE PILES PERMIT DEVELOPMENT STEPS

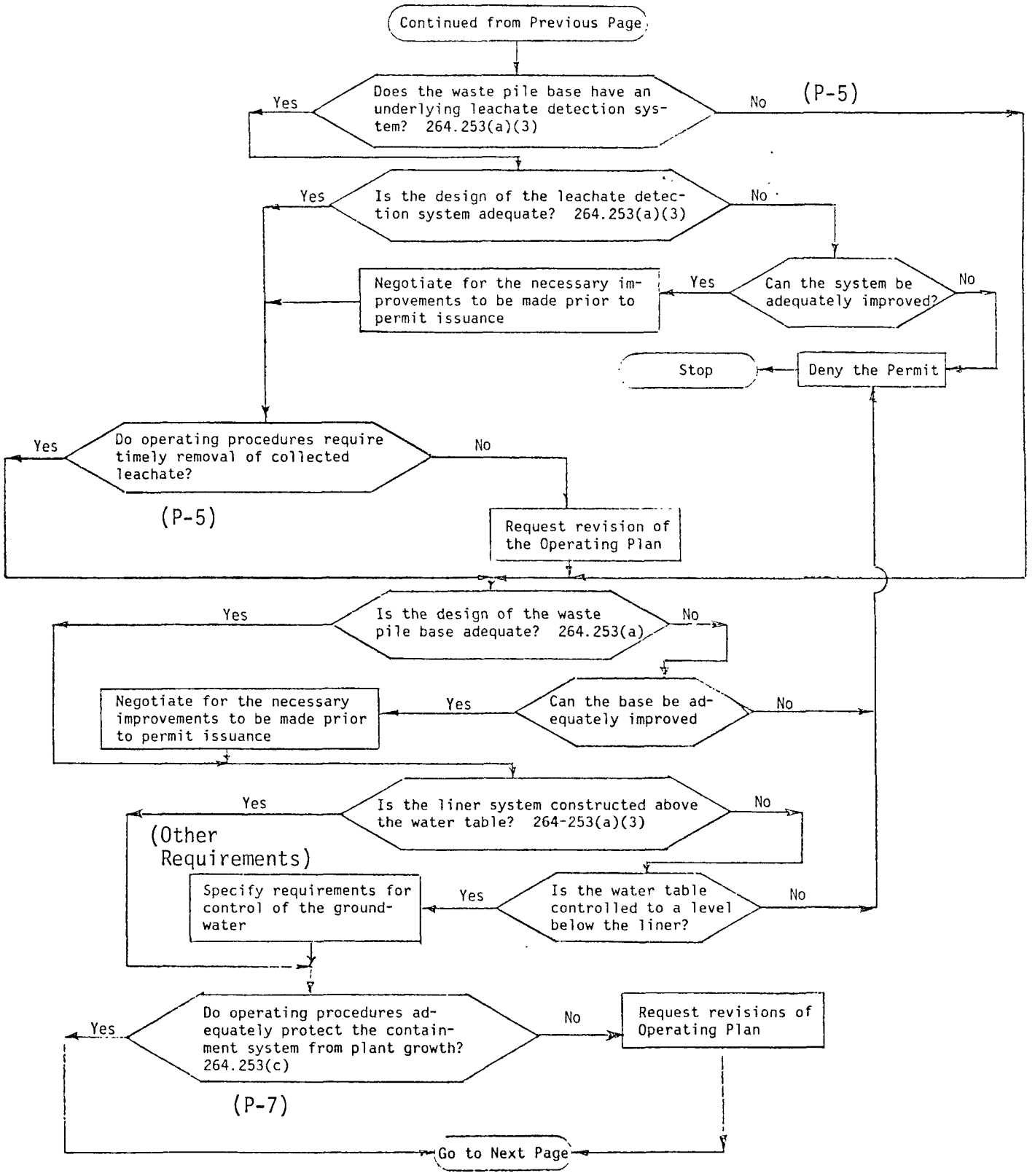


Figure 8

FLOW CHART OF WASTE PILES PERMIT DEVELOPMENT STEPS

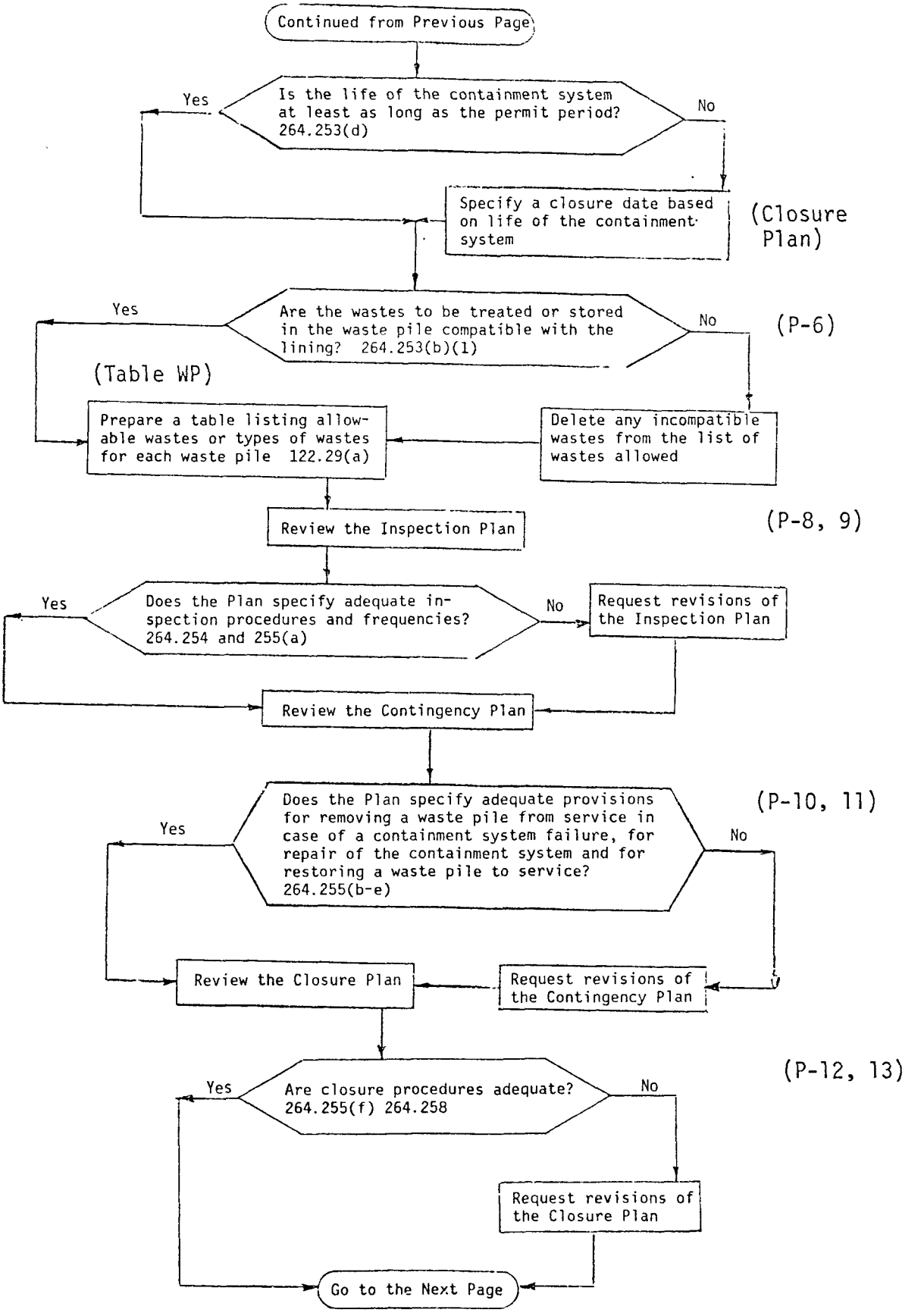


Figure 3 (Cont.)
FLOW CHART OF WASTE PILES PERMIT DEVELOPMENT STEPS

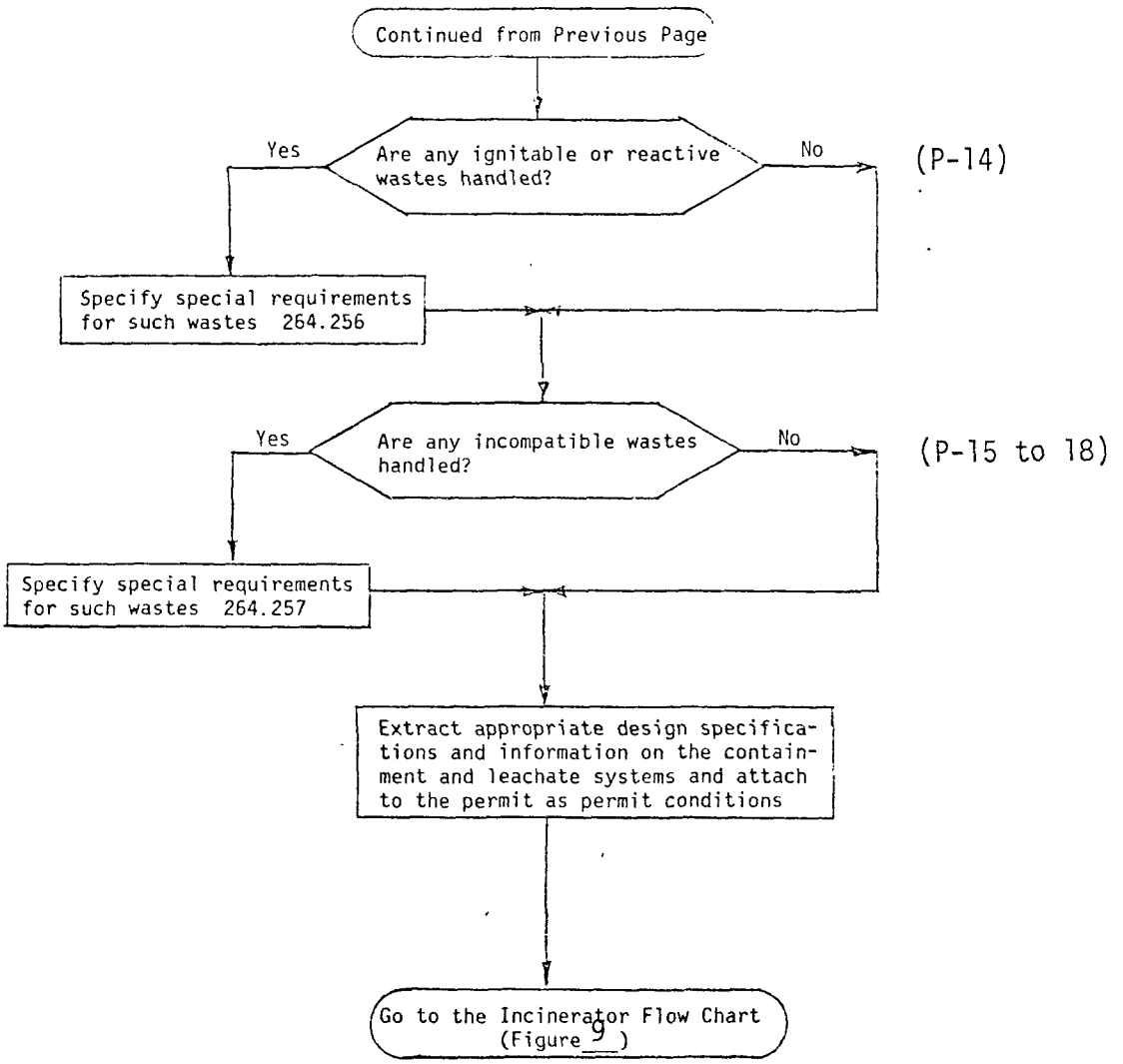


FIGURE 9
INCINERATORS

FIGURE 9

FLOW CHART OF INCINERATOR PERMIT DEVELOPMENT STEPS

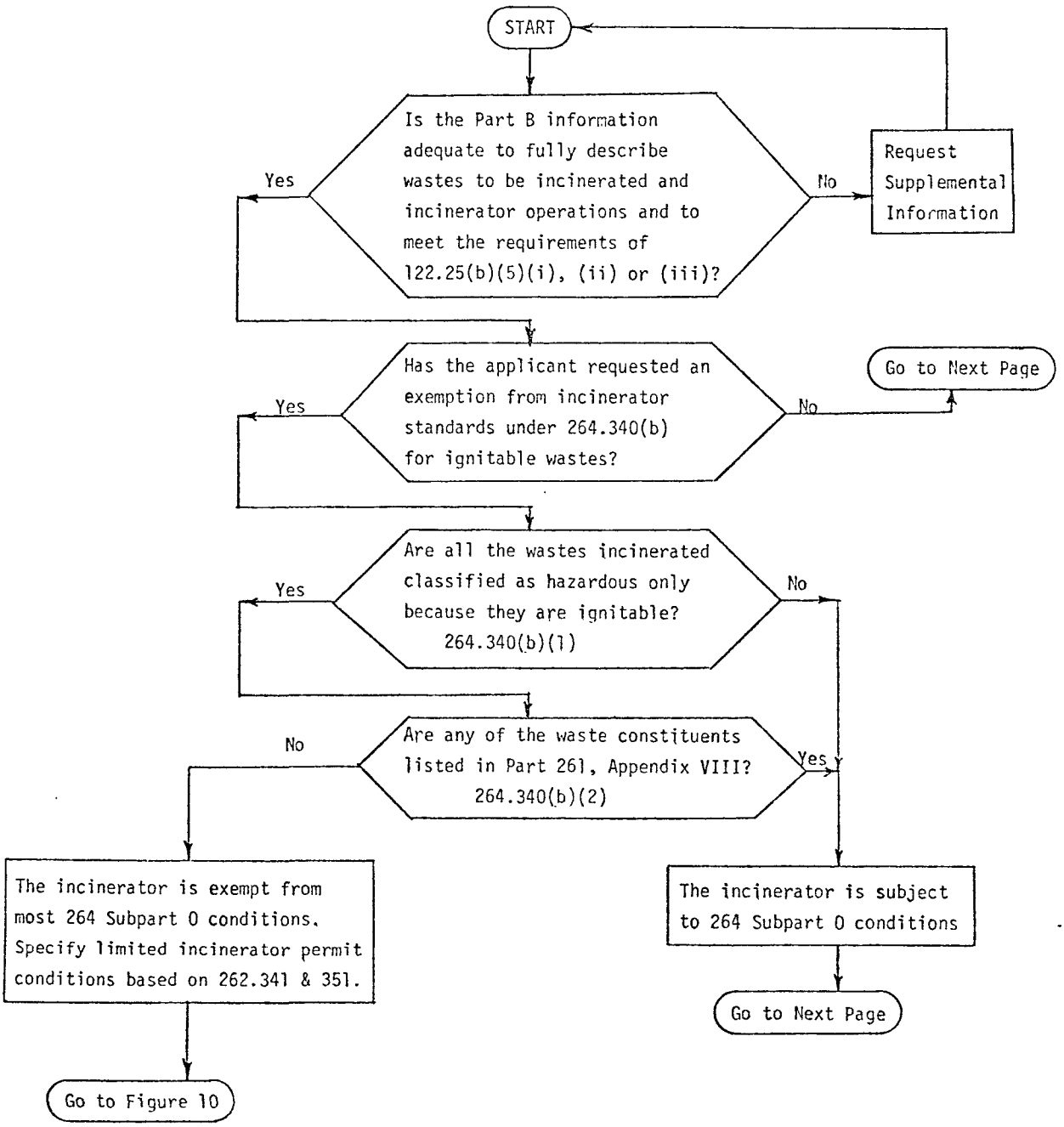


FIGURE 9 (Cont)

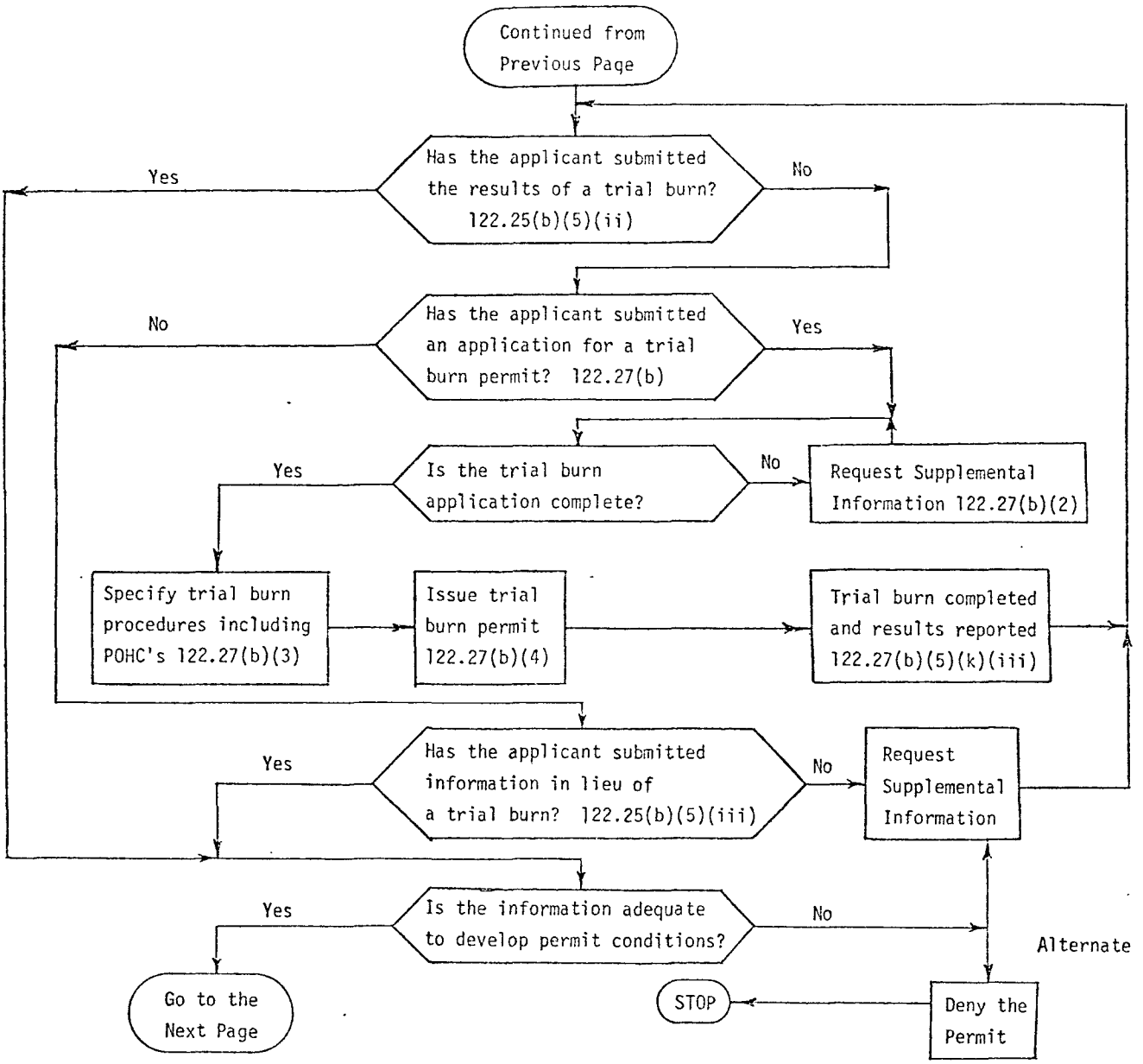


FIGURE 9 (Cont)

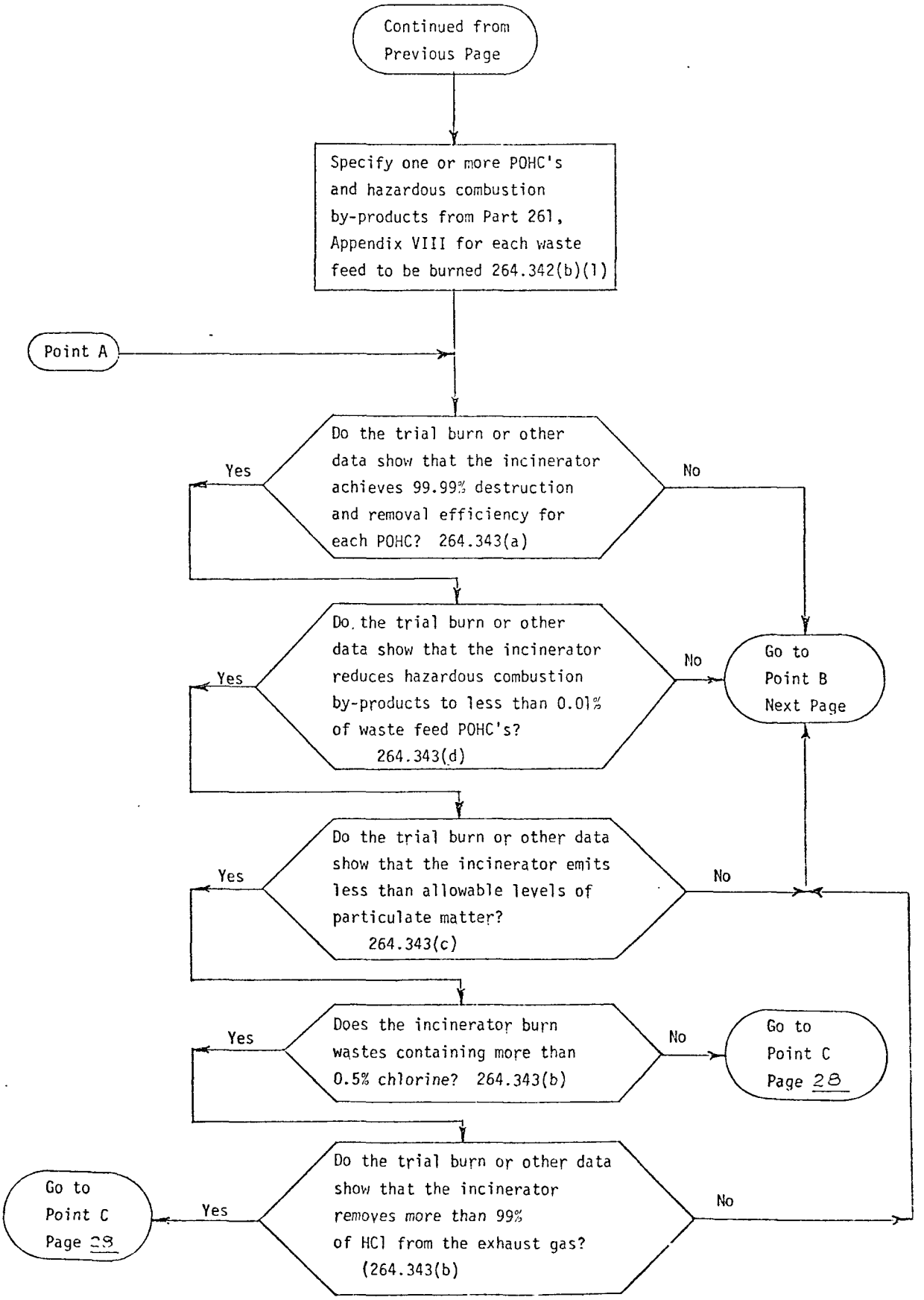


FIGURE 9 (Cont)

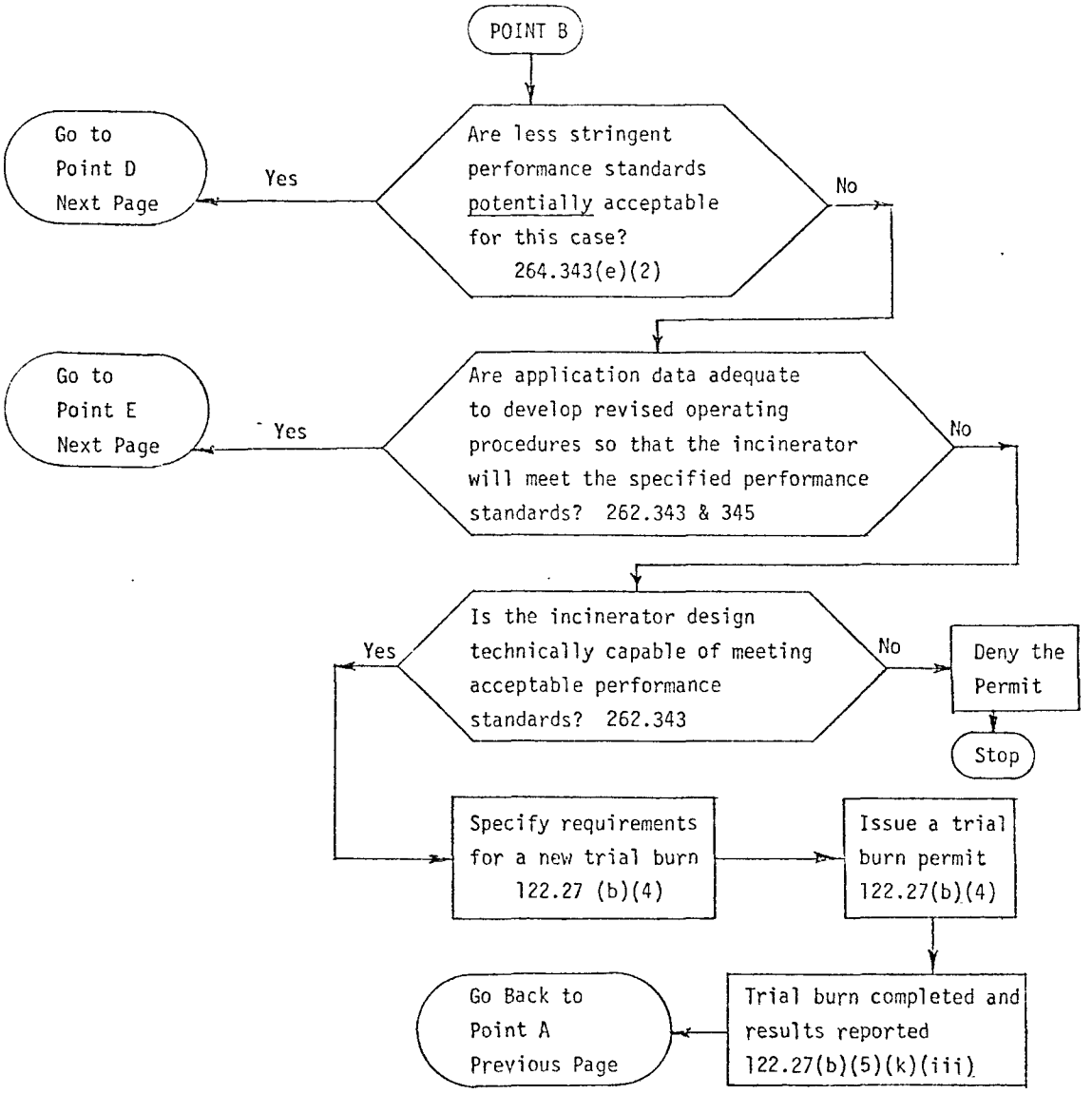


FIGURE 9 (Cont)

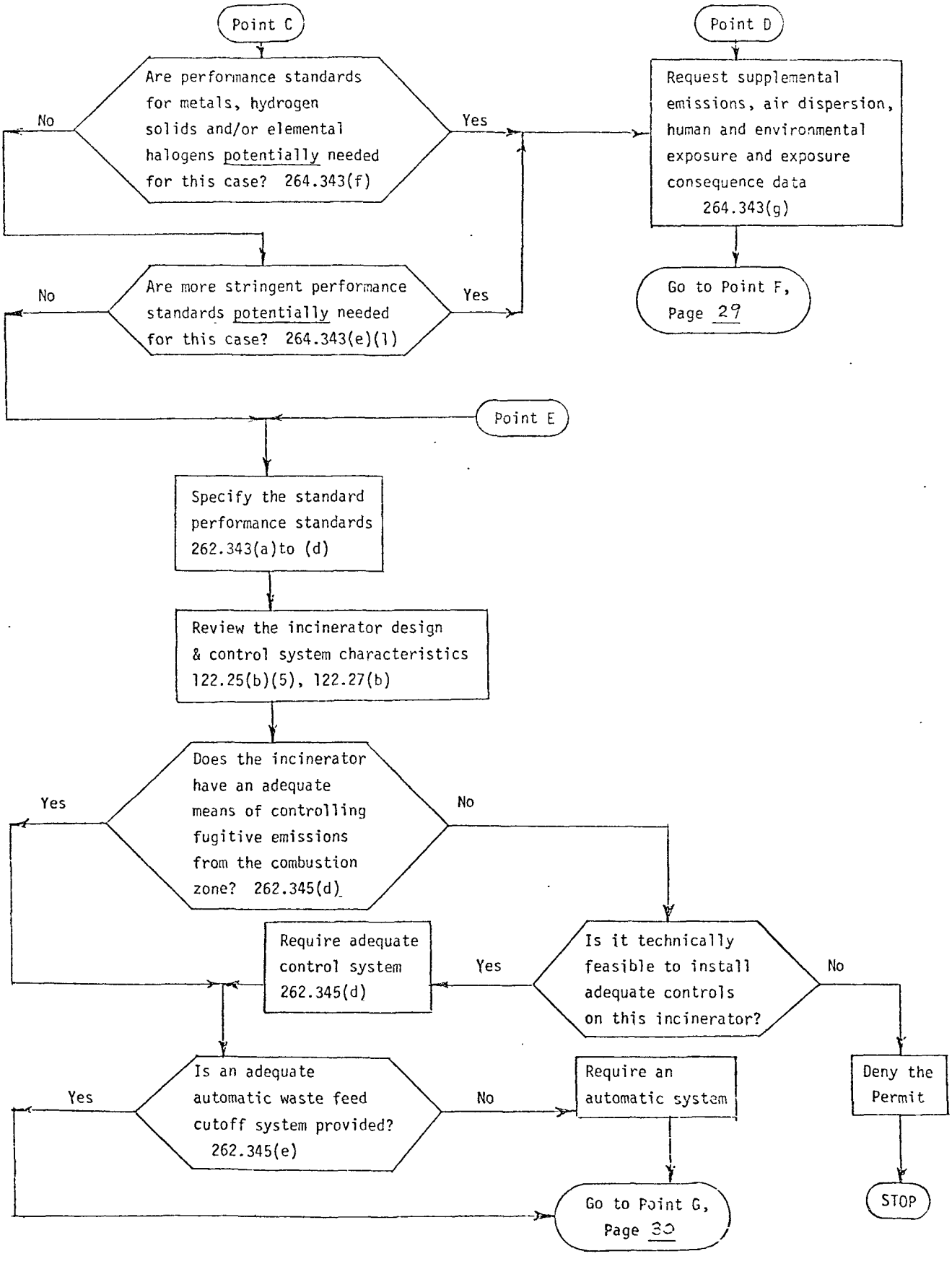


FIGURE 9 (Cont)

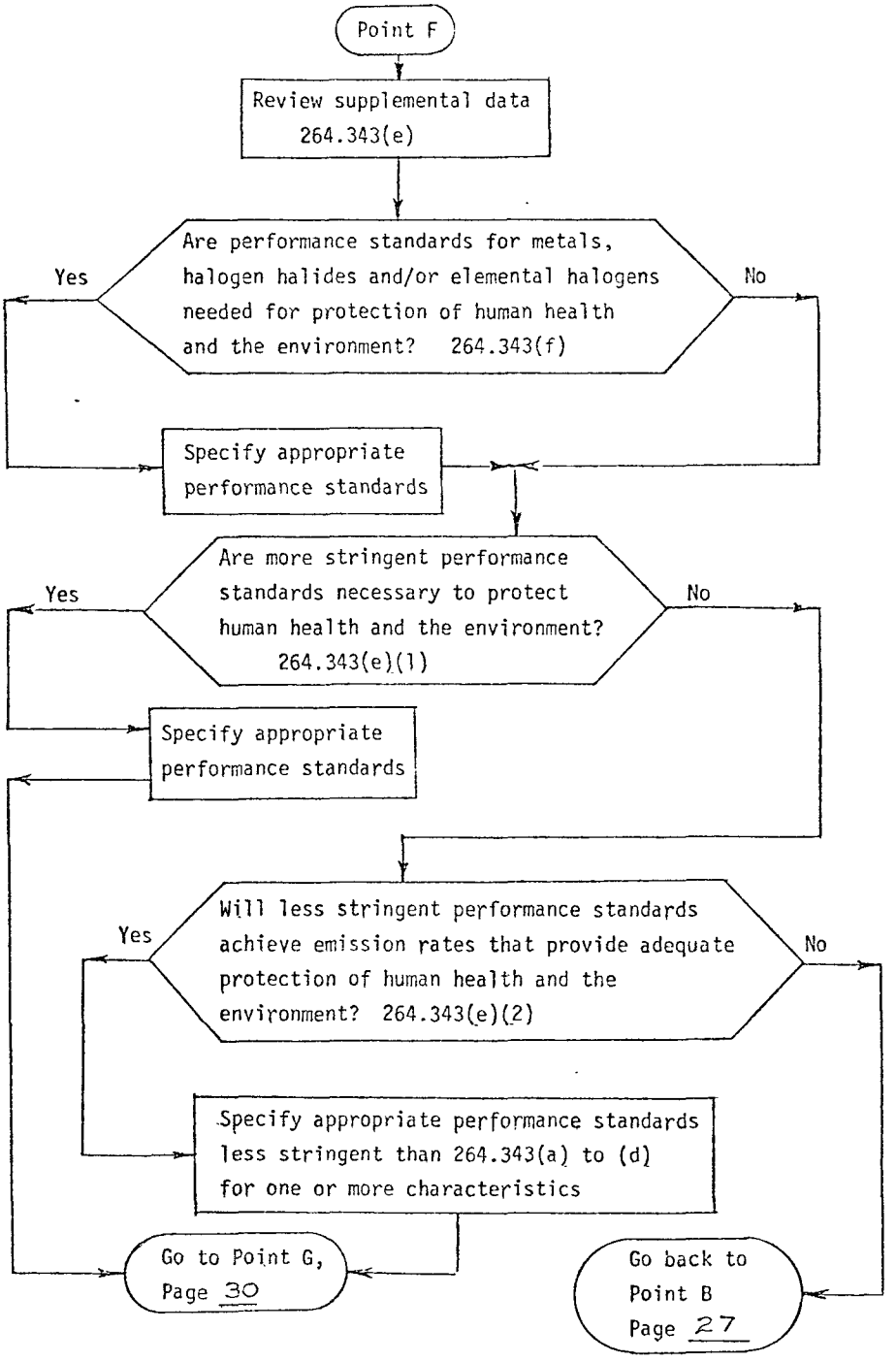
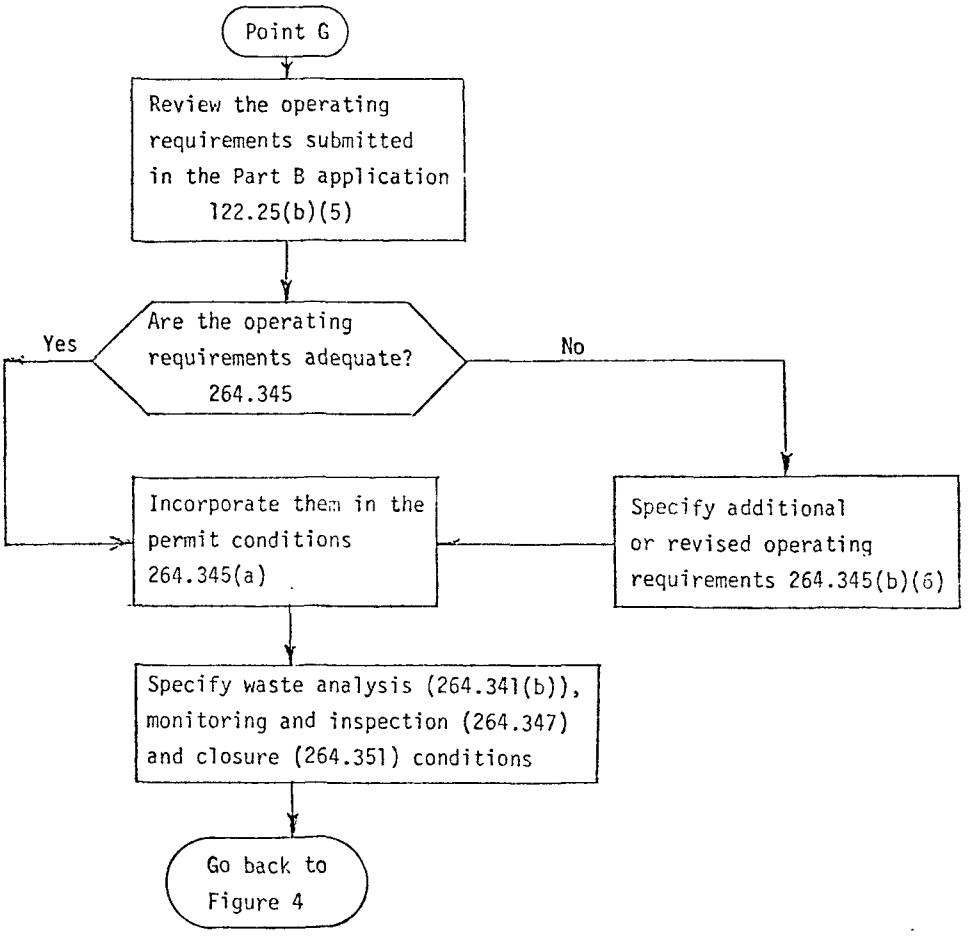


FIGURE 9 (Cont)



VI. RCRA SAMPLE PERMIT

This section presents a sample permit that includes permit forms and general conditions applicable to all types of hazardous waste management facilities; sets of standard permit conditions applicable, respectively, to container, tank, surface impoundment, waste pile, and incinerator hazardous waste management units; and examples of site-specific permit conditions for these five kinds of units. The sample permit is based on 40 CFR Part 265 permit standards that became effective in July 1981. All site-specific examples are hypothetical because no actual permits were yet available.

The sample permit is in a modular format [Table 5] that is designed to minimize permit preparation time. Various pre-printed standard components or modules can be selected from available modules and assembled as appropriate to the specific types of units at the facility. Site-specific information and permit conditions can be quickly entered in the tabular format. In addition to time savings, the use of this sample permit insures that all important permit conditions are included and achieves a degree of uniformity in permits for similar types of facilities.

Im the paragraphs that follow, the purpose of each component of the modular permit is discussed along with instructions on how to use or prepare each component. The flow charts [Figures 4-9] in Section V are designed to be used with this sample permit and give additional instruction on how to use permit application data, technical references, permit standards, and the sample permit to develop permit conditions. The permit writer is also referred to the set of Permit Guidance manuals for various types of facilities prepared by the Office of Solid Waste.

PERMIT COVER SHEETS

The initial cover sheet contains basic information on the facility including permit number, EPA identification number, owner and location.

Table 5

SAMPLE MODULAR RCRA PERMIT COMPONENTS

- Permit Cover Sheets
  - Basic Facility Information
  - List of Attachments
- Hazardous Waste TSD Units List
  - Lists All Treatment, Storage and Disposal Units and Their Design Capacity
- Wastes List
  - Lists All Hazardous Waste Handled at the Facility
- General Conditions
  - Standard Conditions Generic to All TSD Facilities Including Waste Analysis, Inspections, Contingency Plans, Training, Financial Conditions, Closure Plans, Reporting Requirements, Etc.
- Standard Conditions For:
  - Containers
  - Tanks
  - Surface Impoundments
  - Waste Piles
  - Incinerators
    - Standard Conditions are Attached for Each Type of Unit Present at this Facility
- Special Attachments
  - Specific Attachments Required by the Standard Conditions for Each Type of TSD Unit
- Other Requirements
  - Additional Special Conditions for This Facility Developed by the Permit Writer
- Standard Attachments
  - Contingency Plan
  - Inspection Plan
  - Operating Plan
  - Required Design Information

Check-off blocks are provided to indicate what types of hazardous waste managememt activities are conducted at the facility. A second set of blocks is provided for check-off of the specific regulations applicable to the facility. The pemittee is required to comply with all regulations applicable to the facility in addition to those regulations specifically included in permit conditions. This cover sheet is intended to be a standard form that would be filled out on a site-specific basis.

The second cover sheet is the List of Attachments that has two purposes. It lists all permit components that are a part of this permit (shown by a check in the box). It also serves as a handy check list during permit preparation to insure that all applicable permit components are included in the permit under preparation.

HAZARDOUS WASTES TSD UNITS LIST

A list of all hazardous waste management units at a facility and their design capacities must be attached to each permit [40 CFR 122.29]. An example list in a tabular format is presented that is easily adaptable to a pre-printed form. Some form of a key linking each unit to a map would be a desirable feature although not required by regulations.

WASTES LIST

All hazardous wastes or types of wastes managed at a facility must be listed in the permit [40 CFR 122.29]. An example of such a list is shown in a tabular format. The waste number is not required but is a desirable feature to aid in determining waste characteristics or sources.

Where several different major types of wastes are handled such as ignitables, with each other are present, subdivision of the list by waste type of incompatible group would be desirable.

GENERAL CONDITIONS

The Consolidated Permit Regulations [40 CFR Part 122] and the RCRA

Permit Standards [40 CFR Part 264] specify various permit conditions applicable to all types of hazardous waste management facilities. No sample general conditions are presented in the sample permit because of their bulk and pending revisions. Example conditions are contained in Part II of the RCAR Permit Procedures Manual.

STANDARD CONDITIONS

Containers

These standard conditions are designed to be applicable to all container-storage facilities and contain all appropriate conditions required by the Permit Standards [40 CFR Part 264, Subpart I]. Site-specific information and specific permit conditions are contained in other components or attachments to the permit.

Where appropriate, the standard conditions refer to these components and attachments. For a container facility these references include attached design specifications (condition C-5), Other Requirements (condition C-6), the Inspection Plan, the Closure Plan, the Wastes List, Table I, and the General Conditions.

These standard conditions are designed to be used with Figure 5, the flow chart for containers in Section V. An example of the relationship between Figure 5 and the standard conditions is presented in Section V. Additional help in permit preparation may be obtained by consulting the Permit Guidance Manual for Containers.

Tanks

These standard conditions are applicable to new and exisiting tank units used for storage or treatment of hazardous wastes. They are parallel in format to the standard conditions for containers, are developed in the same manner, and are also used in the same way. Figure 6 and the accompanying

text in Section V provide guidance in the use of these standard conditions. Additional information is available in the Permit Guidance Manual for Tanks.

SURFACE IMPOUNDMENTS

Standard conditions applicable to new and existing surface impoundments used for storage or treatment of hazardous wastes are presented. No conditions applicable to surface impoundments used for disposal are presented as final standards for existing facilities are not available.

The standard conditions are also similar in format and application to the container conditions. Figure 7 in Section V provides instruction in their use.

WASTE PILES

Standard conditions for waste piles are very similar to those for surface impoundments. Conditions are presented for storage or treatment facilities but not for disposal facilities.

Figure 8 in Section V provides guidance in the use of these standard conditions. Additional information is contained in the Permit Guidance Manual for Waste Piles.

INCINERATORS

Standard conditions applicable to incinerators have not yet been prepared in the modular format. Such adaptation is difficult because of the relatively larger amount of conditions that are site-specific. Sample permit conditions used in the permit training courses are presented for illustrative purposes.

Figure 9 in Section V provides guidance in the preparation of permit conditions. It is not keyed to this sample permit. Additional guidance is available in the Permit Guidance Manual for Incinerators and the Engineering Handbook for Incinerators.

SPECIAL ATTACHMENTS

There are several special attachments referenced in the standard conditions for containers, tanks, surface impoundments, and waste piles. These include Table T for Tanks, Table SI for Surface Impoundments, Table WP for Waste Piles, and Table I for Incompatible Wastes. These attachments provide a simple means of organizing and attaching site-specific data required by permit regulations and conditions. A sample special attachement is Table T in the Standard Conditions for Tanks.

OTHER REQUIREMENTS

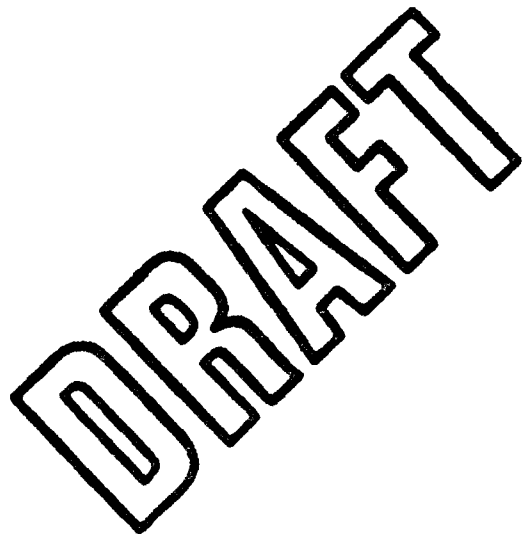
Many permits will require several site-specific permit conditions. These can be conveniently grouped in the Other Requirements. Several sets of standard conditions reference the Other Requirements when specific conditions are needed. An example of Other Requirements is presented in the sample permit.

STANDARD ATTACHMENTS

There are several documents submitted as part of the permit application that will usually be attached to and become part of the permit. These include the Contingency, Inspection, and Operating Plans and contain design information such as the containment system design for container storage facilities. When reviewed by the permit writer and attached to the permit, these attachments become enforceable permit conditions.

Revision of these documents during development of permit conditions will often be required. If revision is necessary after the permit becomes effective, permit modification may be needed in some cases.

SAMPLE MODULAR RCRA PERMIT



This packet contains draft sample permit conditions applicable to various types of hazarous waste management facilities inluding container storage, incinerators, and tanks, surface impoundments and waste piles used for treatment or storage. No disposal facility conditions are included. See the draft RCRA Permit Procedures Manual for guidance in use of this sample permit.

Permit No. : _____

Application No. : _____

EPA Identification No. : _____

Name of Permittee : _____ (Owner/Operator) _____

_____

Facility Location : _____

_____

_____

Effective Date : _____

Expiration Date : _____

In compliance with the provisions of the Resource Conservation and Recovery Act as amended (hereinafter referred to as "the Act"), you are authorized to conduct hazardous waste management activities including:

- ☐ Storage
- ☐ Treatment
- ☐ Disposal

at the listed facility location in accordance with the applicable provisions of 40 CFR Parts 261 to 267 checked below and with provisions and conditions attached to this permit.

- ☐ Part 261, Subpart A
- ☐ Part 262
- ☐ Part 263
- ☐ Part 264, Subparts A-E
- ☐ Part 264, Subpart G
- ☐ Part 264, Subpart H
- ☐ Part 264, Subpart I
- ☐ Part 264, Subpart J
- ☐ Part 264, Subpart K
- ☐ Part 264, Subpart L
- ☐ Part 264, Subpart O
- ☐ Part 266
- ☐ Part 267

For the Environmental Protection Agency

_____

(Title) _____

Date: _____

Permit No.:_____

LIST OF ATTACHMENTS

- ☐ Hazardous Waste TSD Units List
- ☐ Wastes List
- ☐ General Conditions
- ☐ Standard Conditions for Containers
- ☐ Standard Conditions for Tanks
- ☐ Standard Conditions for Surface Impoundments
- ☐ Standard Conditions for Waste Piles
- ☐ Standard Conditions for Incinerators
- ☐ Table T for Tanks
- ☐ Table SI for Surface Impoundments
- ☐ Table WP for Waste Piles
- ☐ Other Requirements
- ☐ Contingency Plan
- ☐ Inspection Plan
- ☐ Operating Plan
- ☐ Design Specifications

Permit No.:_____

HAZARDOUS WASTE TSD UNITS LIST

The following hazardous waste management units described in your permit application are covered by this permit.

Key*	Unit Description	Design Capacity
A	Organic Waste Incinerator	100 gph
B	Chlorinated Waste Incinerator	160 gph
C	Incinerator Feed Tank	5,000 gal
D	Chlorinated Waste Feed Tank	5,000 gal
E	Acid Waste Storage Tank	10,000 gal
F	Acid Waste Storage Tank	10,000 gal
G	Drum Storage Pad	10,000 gal
H	Container Storage Building	25,000 gal
I	Wastewater Storage Impoundment	150,000 gal
J	Wastewater Neutralization Tank	0.2 mgd
K	Wastewater Sludge Pile	1,000 cu. yd.

*See attached Facility Plot Plan.

Permit No. _____

WASTES LIST

The following hazardous wastes described in your permit application may be managed at this facility.

Waste No.	Waste Type	Waste Description
D002	Dilute Acid	Spent Sulfuric Acid
D002	Waste Caustic	Spent Lime Waste
D007	Sludge	Wastewater Treatment Sludge from Benzyl Chloride Production
K015	Chlorinated Organics	Still Bottoms from Benzyl Chloride Production
F001	Spent Solvent	Degreasing Solvents
D002	Wastewater	Acidic Process Wastewaters
K051	Ignitable	API Separator Sludge

Permit No. _____

GENERAL CONDITIONS

See Part II, Pages 51-69 of the RCRA Permit Procedures Manual for apporpriate conditions to be inserted here.

CONDITIONS THAT APPLY TO THE USE AND MANAGEMENT OF CONTAINERS FOR THE STORAGE OF HAZARDOUS WASTES AS REGULATED IN 40 CFR PART 264, SUBPART I.

MANAGEMENT OF CONTAINERS

C-1. Hazardous wastes shall be stored in containers that are maintained in good condition with no evidence of leaks, severe rusting or corrosion, or apparent structural defects. If a container is not in good condition or begins to leak, all hazardous wastes shall be transferred from this container to a container that is in good condition or manage the waste in some other way that complies with the requirements of 40 CFR Part 264. [264.171]

C-2. Containers shall be made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired. [264.172]

C.3. A container holding hazardous waste shall always be closed during storage except when it is necessary to add or remove waste. [264.173(a)]

C.4. A container holding hazardous waste shall not be opened, handled, or stored in a manner which may rupture the container or cause it to leak. [264.173(b)]

C.5. All containers shall only be stored in areas that have a containment system that is capable of collecting and holding spills, leaks, and precipitation. The containment system shall conform to the following description and the attached design specifications:

a. The base underlying the containers shall be maintained free of cracks or gaps and shall be sufficiently impervious to contain leaks, spills, and accumulated rainfall until the collected material is detected and removed;

b. The system shall be designed for efficient drainage so that standing liquid does not remain on the base longer than one hour after a leakage or precipitation event unless the containers are elevated or in some other manner are protected from contact with accumulated liquids; and

c. The system shall include sufficient capacity to contain 10% of the total volume of all containers stored in the area or the volume of the largest container, whichever is greater. [264.175(a)]

C-6. Run-on into the containment system shall be prevented unless specifically authorized in the Other Requirements section of this permit. [264.175(b)]

C-7. Any hazardous waste that spills or leaks as well as any accumulated precipitation shall be removed from the sump or collection area in as

timely a manner as is necessary to prevent overflow of the collection system. [264.175(c)]

C-8. Any material removed from the collection system (if it meets the definition of a hazardous waste in 40 CFR Part 261) shall be returned to a hazardous waste container, transferred to other hazardous waste management facilities included in this permit, managed in some other way that complies with applicable requirements of 40 CFR Parts 262-266 or complies with the Other Requirements of this permit.

INSPECTIONS

C-9. The permittee shall inspect at least weekly the areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system. Inspections must be performed in accordance with the attached Inspection Plan. [264.174]

CORRECTION OF DEFICIENCIES

C-10. Any deterioration or malfunction of equipment or structures of the containment system (including leaks, cracks, pervious areas and inoperative sump pumps) revealed by the inspection shall be remedied by the permittee on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately. [264.15(c)]

CLOSURE

C-11. All hazardous waste and hazardous waste residues shall be removed from the containment system at closure of the facility. Any remaining containers, liners, bases, and soil that contain or are are contaminated with hazardous waste or hazardous waste residue shall be decontaminated or removed. Closure must be performed in accordance with the attached Closure Plan. [264.178]

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

C-12. Ignitable wastes listed in the attached Wastes Table may be stored at the location(s) shown in the attached sketch.

C-13. All containers holding ignitable or reactive waste shall be at least 15 meters (50 feet) from the facility's property line. [264.176]

C-14. If any ignitable or reactive wastes are stored in containers, the requirements of General Condition _____ of this permit shall be complied with. [264.17]

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

C-15. Incompatible wastes listed in attached Table I may be stored at the facility.

C-16. Incompatible wastes or incompatible wastes and materials shall not be stored in the same container unless the requirements of General Condition _____ of this permit are complied with. [264.177(a)]

C-17. Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. [264.177(b)]

C-18. Any storage container holding hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, waste piles, surface impoundments or open tanks, shall be separated from the other materials or protected from them by means of a dike, berm, wall, or other device. [264.177(c)]

CONDITIONS THAT APPLY TO THE USE AND MANAGEMENT OF TANKS FOR TREATMENT OR STORAGE OF HAZARDOUS WASTE AS REGULATED IN 40 CFR PART 264, SUBPART J.*

GENERAL OPERATING REQUIREMENTS

T-1. All hazardous waste storage or treatment tanks shall be designed, equipped, operated and maintained such that sufficient shell strength and, for closed tanks, pressure controls are provided to assure that they do not rupture or collapse. The minimum shell thicknesses specified for each tank in Table T shall be maintained at all times. At any time liquid levels shall not exceed any maximum depths specified in Table T nor reduce the freeboard in any uncovered tanks below the values specified. [264.191 and 264.192]

T-2. Overfilling of tanks shall be prevented by the use of the control mechanism specified in Table T for each tank. These control mechanisms shall be maintained in good operating condition at all times. [264.192(b)]

T-3. Only those hazardous wastes or types of wastes specified in Table T for each tank shall be treated or stored in that tank. [122.29(a)]

T-4. In addition to Condition T-3, wastes or other materials (e.g., treatment reagents) which are incompatible with the material of construction of a tank shall not be placed in that tank unless the tank is protected from accelerated corrosion, erosion or abrasion by a fully intact inner lining or coating of compatible materials or alternate means of protection. [264.192(a)]

INSPECTIONS

T-5. At least once per operating day the permittee shall inspect the following:

a. The overfilling control equipment to ensure that it is in good working order. [264.194(a)(1)]
b. The data gathered from monitoring equipment, where present, to ensure that each tank is being operated according to its design. [264.194(a)(2)]
c. The waste level in each uncovered tank to ensure compliance with maximum depth and/or minimum freeboard requirements. [264.194(a)(3)]

T-6. At least weekly the permittee shall inspect the following:

a. The construction materials of the above ground portions of each tank to detect corrosion or erosion and leaking of fixtures and seams. [264.194(a)(4)]

b. The area immediately surrounding each tank to detect obvious signs of leakage (e.g., wet spots or dead vegetation). [264.194 (a)(5)]

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* These conditions do not apply to covered underground tanks that cannot be entered for inspection. [264.190(b)]

T-7. In addition to the regular inspections specified in conditions T-5 and T-6, the permittee shall conduct periodic comprehensive inspections of each tank to detect cracks, leaks, corrosion or erosion that may lead to crack or leaks, or wall thinning to less than the thickness specified in Table T. Schedules and procedures for such inspections are detailed in the attached Inspection Schedule. [264.194(b)]

CORRECTION OF DEFICIENCIES

T-8. Any deterioration or malfunction of equipment or structures (including leaks, cracks and wall thinning in violation of condition T-1) revealed by the inspection shall be remedied by the permittee on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately. [264.15(c)]

T-9. Any leaks or spills of waste from tanks or ancillary equipment shall be expeditiously cleaned up and the cause of the leak or spill remedied (including removal of waste from the tank if necessary) following the procedures and timing prescribed in the attached Contingency Plan. [264.194(c)]

CLOSURE

T-10. At closure, all hazardous waste and hazardous waste residues shall be removed from tanks, discharge control equipment, and discharge confinement structures. Closure must be performed in accordance with the attached Closure Plan. [264.197]

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

T-11. Ignitable wastes listed in the attached Wastes Table may be stored at the location(s) shown in the attached sketch.

T-12. Ignitable or reactive wastes must not be placed in any tank unless the following conditions are met:

a. The waste is treated, rendered or mixed before or immediately after placement in the tank so that (1) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under 40 CFR 261.21 or 261.23, and (2) General Condition _____ of this permit is complied with; or

b. The waste is stored or treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

c. The tank is used solely for emergencies. [264.298(a)]

T-13. Ignitable or reactive wastes must not be stored in covered tanks unless the National Fire Protection Associations (NFPA's) buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Code - 1977", are complied with. [264.198(b)]

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

T-14. Incompatible wastes listed in attached Table I may be stored at the facility.

T-15. Incompatible wastes, or incompatible wastes and materials, must not be placed in the same tank unless General Condition _____ of this permit is complied with. [264.199(a)]

T-16. Hazardous waste must not be placed in an unwashed tank which previously held an incompatible waste or material unless General Condition _____ of this permit is complied with. [264.199(b)]

Table T

SUMMARY OF STORAGE AND/OR TREATMENT TANKS AND APPLICABLE CONDITIONS

Tank No.	Tank Description	Liner	Design Capacity	Allowable Wastes or Classes of Wastes	Minimum Shell Thickness	Overfilling Controls	Pressure Control	Minimum Freeboard	Max. Liquid Depth
				Storage Tanks					
A-21	Spent Acid Storage East Tank Farm (Stainless Steel)	Glass	5,000 gal	Dilute acids D002	0.20 in	Float-activated level measurement to automatic feed cutoff	Atmospheric vent	N.A.	N.A.
B-05	API Sludge Storage West Tank Farm (Welded Carbon Steel)	None	50,000 gal	Oily Sludges K051	0.30 in	Float-activated level measurement with audible alarm	N.A.	1.0 ft	N.A
B-12	Organics Plant Still Waste Storage (Stainless Steel)	Synthetic membrane	25,000 gal	Still Bottoms from Benzyl Chloride Still K015	0.25 in	Overflow pipe to standby tank. Audible alarm on overflow	5.0 psig relief valve	N.A.	12 ft
				Treatment Tanks					
W-02	Neutralization Tank at WWTP (Concrete)	None	0.5 mgd	Organics Plant Process Wastewaters D002 Caustic and acid treatment reagents.	N.A.	Continuous flow. Overflow pipe has greater capacity than influent line.	N.A.	1.0 ft	N.A.

CONDITIONS THAT APPLY TO THE USE AND MANAGEMENT OF SURFACE IMPOUNDMENTS FOR THE TREATMENT OR* STORAGE OF HAZARDOUS WASTES AS REGULATED IN 40 CFR PART 264, SUBPART K.

GENERAL OPERATING REQUIREMENTS

S-1. All surface impoundments containing hazardous wastes shall be designed, operated and maintained to prevent discharge into the land and groundwater during the life of the impoundment by the use of a containment system meeting the requirements of 40 CFR 264.223 and described in an attachment to this permit. Discharge to surface waters shall also be prevented unless specifically authorized in the Other Requirements of this permit. [264.221(c)].

S-2. The impoundment shall be designed and operated so that any flow of waste into the impoundment can be immediately shut off in the event of overtopping or liner failure. [264.221(b)].

S-3. Only those hazardous wastes or types of wastes specified in Table S for each surface impoundment shall be treated or stored in that impoundment. [122.29(a)].

S-4. The surface impoundment shall be operated to prevent any overtopping due to wind and wave action, overfilling, precipitation, or any combination thereof. [264.222(a)].

S-5. The surface impoundment shall be operated to maintain at least 60 centimeters (2 feet) of freeboard unless a different amount of freeboard is specified in the Other Requirements of this permit. [264.222(b)].

S-6. All earthen dikes shall be designed and maintained with sufficient structural integrity to prevent massive failure without dependence on any liner system included in the surface impoundment design. [264.221(d)].

S-7. All earthen dikes shall be kept free of:

a. Perennial woody plants with root systems which could displace the earthen materials upon which the structural integrity of the dike is dependent; and

b. Burrowing mammals which could remove earthen materials upon which the structural integrity of the dike is dependent or create leaks through burrows in the dike.

S-8. A protective cover, such as grass, shale or rock, shall be provided and maintained on all earthen dikes to minimize wind and water erosion and to preserve the structural integrity of the dike. [264.223(a)].

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* These conditions do not apply to surface impoundments used for disposal of hazardous wastes or that discharge to land or groundwater.

S-9. All run-on shall be diverted away from surface impoundments. [264.222(e)].

S-10. A leachate detection, collection and removal system shall be provided as part of the containment system for each surface impoundment as described in an attachment to this permit. Each leachate system shall be designed, operated and maintained so that liquid will flow freely from the collection system to prevent the creation of pressure head within the collection system in excess of that necessary to cause the liquid to flow freely. All collected leachate shall be removed as it accumulates or with sufficient frequency to prevent backwater within the collection system. [264.221(e) and 222(c)].

S-11. Any material removed from the leachate collection system (if it meets the definition of a hazardous waste in 40 CFR Part 261) shall be returned to the surface impoundment, transferred to other hazardous waste management units included in this permit, managed in some other way that complies with applicable requirements of 40 CFR Parts 262-266 or complies with the Other Requirements of this permit.

INSPECTIONS

S-12. The permittee shall inspect a surface impoundment which contains free liquids at least once each operating day to ensure compliance with provisions S-5, S-6 and S-10 and to detect any leaks or other failures of the impoundment. [264.226(b)(1)].

S-13. The permittee shall inspect each surface impoundment, including dikes, berms and vegetation surrounding the dike, at least once a week and after storms to detect any evidence of or potential for leaks from the impoundment, erosion of dikes, and to ensure compliance with provision S-7. [264.226(b)(2)].

S-14. Whenever there is any indication of a possible failure of the containment system, the permittee shall inspect that system in accordance with the provisions of the containment system evaluation and repair plan described in the attached Contingency Plan. [264.227(a)].

CONTAINMENT SYSTEM REPAIRS

S-15. Whenever there is a positive indication of a failure of the containment system (e.g., an unplanned sudden drop in liquid level in the impoundment, waste detected in the leachate detection system, active leakage through the dike, or a breach, such as a hole, tear, crack or separation, in the liner system), the impoundment shall be removed from service. To remove the impoundment from service the permittee must:

a. Immediately shut off the flow of or stop the addition of wastes into the impoundment;

b. Immediately contain any leakage which has occurred or is occurring;

c. Immediately cause the leak to be stopped;

d. If the leak cannot be stopped by any other means, empty the impoundment; and

e. Take any additional actions prescribed in the attached Contingency Plan. [264.227(b, c and d)].

S-16. No surface impoundment that has been removed from service in accordance with provision S-15 may be restored to service unless:

a. The containment system has been repaired in accordance with the attached Contingency Plan; and

b. The containment system has been certified by a qualified engineer as meeting the approved design specifications attached to this permit. [264.227(d)(2) and (e)].

CLOSURE

S-17. At closure, all hazardous waste and hazardous waste residues shall be removed from the impoundment. Any component of the containment system or any appurtenant structures or equipment (e.g., discharge platforms and pipes, and baffles, skimmers, aerators or other equipment) containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed. Closure shall be performed in accordance with the attached Closure Plan.[264.228].

S-18. A surface impoundment that has been removed from service in accordance with provision S-15 and that is not being repaired shall be closed in accordance with provision S-17. [264.227 (f)]

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

S-19. Ignitable or reactive waste shall not be placed in a surface impoundment unless:

a. The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that:

1. The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive wastes under 40 CFR Part 261.21 and 261.23; and

2. The permittee complies with the requirements of General Condition ___ of this permit; or

b. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react; or

c. The surface impoundment is used solely for emergencies. [264.229].

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

S-20. Incompatible wastes or incompatible wastes and materials shall not be placed in the same surface impoundment unless the requirements of General Condition ___ of this permit are complied with. [264.230].

CONDITIONS THAT APPLY TO THE USE AND MANAGEMENT OF WASTE PILES FOR THE TREATMENT OR STORAGE OF HAZARDOUS WASTES AS REGULATED BY 40 CFR PART 264, SUBPART L.

GENERAL OPERATING REQUIREMENTS

P-1. All waste piles containing hazardous wastes shall be designed, operated, and maintained to prevent discharge into the land, surface water, or groundwater during the life of the pile by use of a containment system which complies with the requirements of 40 CFR Part 264.253 as described in an attachment to this permit. [264.251(b)].

P-2. All waste piles shall be designed, operated, and maintained to control dispersal of the waste by wind, where necessary, or by water erosion. Any specific control practices listed in the Other Requirements of this permit shall also be followed. [264.251(a) and 252(a)].

P-3. Run-on shall be diverted away from all waste piles. [264.252(b)].

P-4. All leachate and run-off from waste piles must be collected and controlled. If the collected leachate or run-off meets the definition of a hazardous waste in 40 CFR Part 261, it shall be transferred to other hazardous waste management units included in this permit, managed in some other way that complies with applicable requirements of 40 CFR Part 262-266 or complies with the Other Requirements of this permit. [264.252(c)].

P-5. If the containment system for the waste pile includes a leachate detection, collection and removal system beneath the base, the leachate system shall be designed and operated to detect, contain, collect, and remove any discharge from the base. All collected leachate shall be removed as it accumulates or with sufficient frequency to prevent backwater within the collection system. [264.253(a)(3)].

P-6. Only those hazardous wastes or types of wastes specified in Table WP for each waste pile shall be treated or stored in that pile. [122.29(a)].

P-7. The containment system shall be protected from plant growth which could puncture any component of the system. [264.253(c)].

INSPECTIONS

P-8. Periodic inspections shall be conducted of the waste pile, exposed portions of the base and/or liner, facilities for collection and management of leachate and runoff, and the leachate detection and collection system (if any) in accordance with the attached Inspection Schedule. [264.15].

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* These conditions do not apply to waste piles that are used for disposal of hazardous wastes or that discharge to land or groundwater.

P-9. Whenever there is any indication of a possible failure of the containment system, that system shall be inspected in accordance with the provisions of the containment system evaluation and repair plan described in the attached Contingency Plan. [264.255(a)].

CONTAINMENT SYSTEM REPAIRS

P-10. Whenever there is a positive indication of a failure of the containment system (e.g., waste detected in any leachate detection system or a breach, such as a hole, tear, crack, or separation, in the base), the waste pile shall be removed from service. To remove the pile from service, the permittee must:

a. Immediately stop adding wastes to the pile;

b. Immediately contain any leakage which has or is occuring;

c. Immediately cause the leak to be stopped;

d. If the leak cannot be stopped by any other means, remove the waste from the base; and

e. Take any additional actions prescribed in the attached Contingency Plan. [264.255 (b, c, and d)].

P-11. No waste pile that has been removed from service in accordance with provision P-10 may be restored to service unless:

a. The containment system has been repaired in accordance with the attached Contingency Plan; and

b. The containment system has been certified by a qualified engineer as meeting the approved design specifications attached to this permit. [264.255(d)(2) and (e)].

CLOSURE

P-12. At closure, all hazardous waste and hazardous waste residues shall be removed from the pile. Any component of the containment system contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed. Closure shall be performed in accordance with the attached Closure Plan.[264.258].

P-13. A waste pile that has been removed from service in accordance with provision P-10 and that is not being repaired shall be closed in accordance with provision P-12. [264.255(f)]

SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

P-14. Ignitable or reactive waste shall not be placed in a pile unless:

a. Addition of the waste to an existing pile:

1. Results in the waste or mixture no longer meeting the definition of ignitable or reactive waste under 40 CFR 261.21 or 261.23, and

2. The permittee complies with the requirements of General Condition ___ of this permit; or

b. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react. [264.256(a)].

SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

P-15. Incompatible wastes listed in the attached Table I may be stored at this facility.

P-16. Incompatible wastes or incompatible wastes and materials shall not be placed in the same pile unless the requirements of General Condition ___ of this permit are complied with. [264.257(a)].

P-17. A pile of hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device. [264.257(b)].

P-18. Hazardous waste must not be piled on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to ensure compliance with General Condition _____of this permit. [264.257(c)].

SAMPLE PERMIT

Conditions that apply to the use and mangement of Incinerators for the Treatment of Hazardous Wastes as Regulated by 40 CFR Part 264, Subpart 0.

The conditions presented in this section are examples only. We are presently refining the suggested language for incineration permits and are providing this preliminary draft to indicate our general approach. The sample conditions provide information on the level of detail the complexity and the scope of related conditions which might be developed by the permit writer in an actual permit. All numerical information is for illustrative purposes only.

Conditions 1 and 2 are designed to provide examples of waste feed and POHC feed monitoring.

1. The permittee is allowed to burn, only the wastes listed in Attachment 1 with the POHC designation and quantities listed below. (Attachment 1 would be the list of hazardous waste identified in waste analysis.)

2. The wastes fed to the incinerator shall be limited by the following conditions:

   a) Wastes A, B, C shall be burned in accordance with the operating conditions resulting from the trial burns called condition "RED", as a minimum. Condition RED is designated as _____.

   b) Wastes D through Q shall be burned in accordance with the operating conditions resulting from the trial burns called conditions "BLUE", as a minimum wastes D through Q may be burned under RED condition. Condition BLUE is designated as _____.

   c) Maximum feed rates for each POHC are follows:

      1) POHC X __x__ lb/hr;

         POHC X __y__ lb/hr;

         POHC X __z__ lb/hr;

      2) Waste feed limits are as follows:

	max. lb/hr.
waste A	800
" B	700
" C	4000
wastes D thru Q	6000

Conditions 3, 4, 5 and 6 are examples of constraints on the mode of incinerator operation.

3. During start-up and shut-down of an incinerator, hazardous waste [except ignitable waste exempted in accordance with §264.340] must not be fed into the incinerator unless the incinerator is operating within the conditions for temperature, air feed rate, etc. specified in the permit.

4. No solid materials containing the stipulated POHC's may be incinerated in the liquid injection incinerator. Ony liquid wastes A, B & C containing the POHC's having a fluidity equal to or greater than that of American Society of Testing Materials (ASTM) No. 5 fuels oil, with a maximum viscosity of 750 Saybolt Seconds Universal (SSU), at 38 Degrees C shall be incinerated. The bottom sediment and water (BS & W) shall not exceed ten (10) percent by volume.

5. No burning of liquid wastes A, B & C shall take place unless the incinerator is operating in the range of 1100 Degrees C to 1200 degrees C in the burning zone. The liquid waste shall be injected directly into the flame. Burning shall not be permitted during periods of startup, shutdown, major upset, or fuel interruption. (See alarm and shutoff requirements).

6. The kiln shall be operated at all times in an oxidizing atmosphere. (Oxygen in the kiln exhaust gases shall be maintained at a level of not less than 0.5 percent by volume.)

The following group of conditions are related to air stream monitoring and control.

7. The Carbon-Monoxide level (as measured by Illinois EPA ATP-2 method) shall not exceed 50 ppm.

8. The Air Pollution Control Scrubber system will operate under conditions stipulated in the trial burns for Conditions RED and BLUE at all times:

   i The pH of the scrubber solution shall not be less than 10.5 measured at the scrubber feed pump.

   ii A minimum flow rate of 50 gpm shall be maintained at the feed inlet to the first stage system.

iii The pressure drop across the scrubber system shall be maintained between 20 and 50 inches of water.

9. The particulate emissions shall not exceed 180 milligrams per dry standard cubic meter (.08 grains per dry standard cubic foot) when corrected for 12% CO_2.

10. Fugitive emissions will be controlled by maintaining combustion zone pressure lower than atmospheric pressure at all times when burning wastes listed in this permit.

Conditions 11, 12, and 13 are examples of instrumentation and control provisions. Condition number 13 in this set of examples is a reminder that feed rate monitoring may include sensing systems in the plants storage facility.

11. Instrumentation and controls shall be provided to accomodate the following:

    a. Continuous indicating and recording of:

        1) Waste feed rate;

        2) Fuel flow rate;

        3) Combustion gas temperatures and gas exhaust temperature;

        4) Draft (static) pressure in the firing hood (intermittent recording);

        5) Exhaust fan speed;

        6) Volumetric concentration of carbon monoxide (CO), in the stack emission.

12. Controls must be provided for alarm and automatic shut-down of waste feed in the event the following conditions occur:

    o Auxiliary Fuel flow interruption;

    o Waste feed control;

    o Loss of draft in the firing hood for two (2) seconds or longer;

    o Combustion gas temperature (as measured by the gas exhaust temperature) drops below 1100 Degrees C ;

- o Power failure;
- o Flame failure (when the UV detector detects a flame out);
- o Failure of any of the above monitoring, recording, and controlling operations;
- o A drop in prime move amperage to less than 80 amps;
- o Scrubber: failure of pump, when pressure falls outside range of 20 to 50 inches of water.

13. Level and temperature indicators must be provided on the waste storage tank with high temperature warning systems.

14. Monitoring and Inspections - The permittee shall conduct, at a minimum, the following monitoring while incinerating hazardous wastes:

    (a) Combustion temperature, waste feed rate, and air feed rate must be monitored and recorded on a continuous basis.

    (b) CO must be monitored and recorded on a continuous basis at point lettered X on the facility drawing.

    (c) Upon request by the Regional Administrator, but not more than twice annually, sampling and analysis of the waste and exhaust emissions must be conducted to verify that the operating requirements established in the permit achieve the performance standards of §264.343 (40 CFR, Part 264, Subpart O).

    (d) The incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be completely inspected at least daily for leaks, spills, and fugitive emissions. All emergency waste feed cut-off controls and system alarms must be checked daily to verify proper operation.

    (e) This monitoring and inspection data must be recorded and the records must be placed in the operating log required by §264.73.

(The permit writer may stipulate reporting conditions which are tailored to the special requirements of the permittee and EPA's interest in assessing compliance.)

15. A revised permit may be required:

- by any change in burner configuration or number of burners;
- any change in the feed delivery system which would increase feed delivery capability;
- any reduction in stack height;
- any change in Air Pollution Control system configuration which would result in modified pressure drop;
- any change of measurement point of temperature, air flow or other system operating parameter stipulated in the permit;
- any prime mover (fan) changes which would result in significant changes in air delivery capacity - on the order of $\pm$ 10%;
- any change in system configuration which would result in a reduction in effective residence time.

Trial Burn Permit

1. The permittee shall comply with the requirements of 40 CFR §122.27(b).

2. The permittee shall conduct the trial burn in accordance with the trial burn plan attached to this permit.

3. The permittee shall submit to the Director a certification that the trial burn had been carried out in accordance with the approved trial burn plan and the results of all the determinations required in §122.26(b)(5)(i). To the extent possible, this submission shall be made within 30 days of the completion of the trial burn or sooner if the Director so requests.

4. All data collected during any trial burn must be submitted to the Director following the completion of the trial burn. The results of the trial burn must be included with Part B of the permit application, if a permit application is submitted.

5. All submissions required by this paragraph shall be certified on behalf of the applicant by the signature of a person authorized to sign a permit application or a report under §122.6.

Permit No. _____

OTHER REQUIREMENTS

1. Run-on of precipitation runoff from the truck loading area into the containment system for Drum Storage Area G is permitted.

2. All collected runoff from Drum Storage Area G shall be discharged to Wastewater Storage Impoundment I.

3. There shall be no discharge of wastes from Wastewater Storage Impoundment I except to Wastewater Neutralization Tank J.

4. Any leachate collected from the leachate system for Wastewater Storage Impoundment I shall be discharged to Wastewater Neutralization Tank J.

4. Any leachate collected from the leachate system for Wastewater Storage Impoundment I shall be discharged to Wastewater Neutralization Tank J.

5. The water table under Wastewater Storage Impoundment I shall be artificially depressed to a minimum of 5 feet below the bottom liner at all times by pumping of Wells 5 and 6.

6. There shall be no discharge of waste liquids from Wastewater Sludge Pile K except to Wastewater Neutralization Tank J. All collected leachate and surface runoff shall be discharged to Tank J.

7. Wind dispersal of wastewater sludge shall be minimized by keeping a tarp cover on the west face of the pile except when adding material to the pile.

APPENDICES

APPENDIX A
CONSOLIDATED PERMIT REGULATIONS

ENVIRONMENTAL PROTECTION AGENCY
CONSOLIDATED PERMIT PROGRAM REGULATIONS

PART 122—EPA ADMINISTERED PERMIT PROGRAMS: THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM; THE HAZARDOUS WASTE PERMIT PROGRAM; AND THE UNDERGROUND INJECTION CONTROL PROGRAM

Subpart A—Definitions and General Program Requirements

Sec.

Subpart B—Additional Requirements for Hazardous Waste Programs Under the Resource Conservation and Recovery Act

Subpart C—Additional Requirements for Underground Injection Control Programs Under the Safe Drinking Water Act

Sec.

Subpart D—Additional Requirements for National Pollutant Discharge Elimination System Programs Under the Clean Water Act

Authority: Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.*; Safe Drinking Water Act, 42 U.S.C. § 300f *et seq.*; and Clean Water Act, 33 U.S.C. § 1251 *et seq.*

PART 123—STATE PROGRAM REQUIREMENTS

Subpart A—General Program Requirements

Subpart B—Additional Requirements for State Hazardous Waste Programs

Subpart C—Additional Requirements for State UIC Programs

Subpart D—Additional Requirements for State Programs Under the National Pollutant Discharge Elimination System

Subpart E—Additional Requirements for State Programs Under Section 404 of the Clean Water Act

Subpart F—Requirements for Interim Authorization of State Hazardous Waste Programs

Authority: Resource Conservation and Recovery Act, 42 U.S.C. 6901 *et seq.;* Safe Drinking Water Act, 42 U.S.C. 300(f) *et seq.;* Clean Water Act, 33 U.S.C. 1251 *et seq.*

PART 124—PROCEDURES FOR DECISIONMAKING

Subpart A—General Program Requirements

Sec.

Subpart B—Specific Procedures Applicable to RCRA Permits [reserved]

Subpart C—Specific Procedures Applicable to PSD Permits

Subpart D—Specific Procedures Applicable to NPDES Permits

Subpart E—Evidentiary Hearing for EPA-Issued NPDES Permits and EPA-Terminated RCRA Permits

Subpart F—Non-Adversary Panel Procedures

Authority: Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq;* Safe Drinking Water Act, 42 U.S.C. § 300(f) *et seq;* Clean Water Act, 33 U.S.C. § 1251 *et seq;* and Clean Air Act, 42 U.S.C. § 1857 *et seq.*

PART 125—CRITERIA AND STANDARDS FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Authority: Clean Water Act, as amended by the Clean Water Act of 1977, 33 U.S.C. 1251 et seq.

APPENDIX B

40 CFR REGULATIONS
EFFLUENT STANDARDS AND LIMITATIONS

APPENDIX C
RCRA REGULATIONS

RCRA REGULATIONS - HW Management System

Part 260 - General Provisions

- Subpart A - General
- " B - Definitions
- " C - Rulemaking Petitions

Part 261 - Identification and Listing of HW

- Subpart A - General
- " B - Criteria for Identifying the Characteristics of HW and for Listing HW
- " C - Characteristics of Hazardous Wastes
- " D - Lists of HW
- Appendices

Part 262 - Standards Applicable to Generators of HW

- Subpart A - General
- " B - The Manifest
- " C - Pretransport Requirements
- " D - Recordkeeping and Reporting
- " E - Special Conditions

Part 263 - Standards Applicable to Transporters of HW

- Subpart A - General
- " B - Compliance With the Manifest System & Recordkeeping
- " C - HW Discharges

Part 264 - Standards for Owners & Operators of HW Treatment, Storage & Disposal Facilities

Subpart A - General	F
" B - General Facility Standards	F
" C - Preparedness & Prevention	F
" D - Contingency Plan & Emergency Procedures	F
" E - Manifest System, Recordkeeping & Reporting	F
" F - Ground Water & Air Emission Monitoring	P
" G - Closure & Post-Closure	IF
" H - Financial Requirements	P
" I - Use & Management of Containers	IF
" J - Tanks	IF
" K - Surface Impoundments	IF
" L - Waste Piles	IF
" M - Land Treatment	P
" N - Landfills	P
" O - Incinerators	IF
" P - (Reserved)	
" Q - (Reserved)	
" R - Underground Injection	P
" S - Seepage Facilities	P
" T - Minimum Acceptable Treatment of HW Prior to Disposal	P

Part 265 - Interim Status Standards for Owners & Operators of HW Treatment, Storage & Disposal Facilities
- Subparts A through O - Same as Part 264
- Subpart P - Thermal Treatment
- " Q - Chemical, Physical & Biological Treatment
- " R - Underground Injection

Part 266 - Standards for the Management of Specific HW and Specific Types of HW Management Facilities
- Subpart A - General
- " B - Elementary Neutralization Units & Wastewater Treatment Units

Part 267 - Interim Standards for Owners & Operators of New HW Land Disposal Facilities
- Subpart A - General
- " B - Environmental Performance Standard
- " C - Landfills
- " D - Surface Impoundments
- " E - Land Treatment
- " F - Ground Water Monitoring
- " G - Underground Injection