TCEQ REGULATORY GUIDANCE
Remediation Division
RG-366/TRRP-03 ● Revised March 2009

TRRP Compatibility with RCRA

Overview of This Publication

Objectives:	This document explains the interface of the Texas Risk Reduction Program (TRRP) rule with the Resource Conservation and Recovery Act (RCRA) as it relates to closure of a hazardous waste management unit with and without a release, RCRA permit modifications, corrective action (including regulated units, points of compliance, solid waste management units, corrective action process, and Facility Operations Area), "Contained in" policy, and soil reuse.
Audience:	Regulated community and environmental professionals knowledgeable in RCRA
References:	The Texas Risk Reduction Program (TRRP) rule, together with conforming changes to related rules, is contained in 30 TAC Chapter 350. The TRRP rule was initially published in the September 17, 1999 Texas Register (24 TexReg 7413-7944) and was amended in 2007 (effective March 19, 2007; 32 TexReg 1526-1579). Find links for the TRRP rule and preamble, Tier 1 PCL tables, and other TRRP information at: <www.tceq.state.tx.us/remediation/trrp/>. TRRP guidance documents undergo periodic revision and are subject to change. Referenced TRRP guidance documents may be in development. Links to current versions are at: <www.tceq.state.tx.us/remediation/trrp/guidance.html>.
Contact:	TCEQ Remediation Division Technical Support Section – 512-239-2200, or e-mail <techsup@tceq.state.tx.us>. For mailing addresses, refer to: <www.tceq.state.tx.us/about/directory/>.

Introduction

TRRP (30 TAC 350) specifies the assessment, monitoring, cleanup, reporting, and any post-response action care and financial assurance requirements that certain response actions and waste management unit closures must meet. TRRP became effective on September 23, 1999. Texas is authorized by the EPA to carry out the federal RCRA program in place of EPA for closures, corrective actions and other core RCRA functions. Prior to TRRP, RCRA closures and corrective actions were conducted under the Risk Reduction Rule (RRR) (30 TAC Chapter 335, Subchapters A and S). Where comparable federal regulations exist, the TRRP rule has been designed to mesh with those regulations so that the person will be able to comply with both state and federal requirements without conflict. As indicated in §350.2(a), the person must also meet any more stringent or additional requirements found in the RCRA program. This document clarifies the interplay between these programs and explains how RCRA facilities can comply with TRRP and RCRA for closures and corrective actions.

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RCRA Unit Closure

Hazardous waste management units ("units") that are required to close must satisfy the RCRA regulations for procedural and technical closure requirements. TRRP supports the RCRA rules by providing more specific meaning to the technical requirements. Closure means that a unit, including <90 day accumulation, interim status and permitted status units, has been taken out of service and has met applicable closure performance standards. TRRP and RCRA require a similar closure performance standard as found in 40 CFR §264/265.111and in §350.2(h):

> The person shall close a waste management facility component in a manner that minimizes or eliminates the need for further maintenance and controls. The manner of closure shall also minimize or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of waste, contaminants, leachate, run-off, or decomposition products to the surrounding environmental media.

If there is not a release from the unit, closure under TRRP is limited to this performance standard and the requirement to remove, decontaminate or control the waste within the unit. A release from the unit to the surrounding environmental media is handled as a response action that must attain either Remedy Standard A or B.

There are two main types of closure for RCRA purposes: "clean closure" and "closure in place." Closure in place requires performing closure and post-closure care in accordance with the requirements that apply to landfills. Either type of closure involves closure of the waste unit and, if needed, a response action for a release from the unit to surrounding environmental media. A key distinction is that closure in place will incur continuing regulation under RCRA for post-closure care of controls on hazardous waste remaining in the unit and/or contaminated media being left in place in excess of protective levels. Table 1 illustrates the application of TRRP to the two main types of RCRA closure. Note that there are additional requirements if a release has occurred from the unit. The RCRA program typically selects chemicals of concern (COCs) from the lists of hazardous constituents in 40 CFR Part 261 Appendix VIII and Part 264 Appendix IX and utilizes an exceedance of background concentrations of COCs, or an analytical method's limit of detection (e.g., provided the method quantitation limit (MQL) is sufficiently sensitive), as the indication of a release. The cleanup level for the release, however, is the critical protective concentration level (PCL) developed in response to TRRP.

Table 1. Types of RCRA Closure and TRRP Requirements

RCRA Closure	TRRP Requirements	Post-Closure Care
Clean Closure	Waste in unit—Remove listed hazardous waste; remove/decontaminate characteristic or non-hazardous waste, contaminated liners, other unit components. §§350.2(h), 350.31(a) and (j), and 350.32(a)(1)–(4)	NO*
	Release—Remove/decontaminate environmental media to meet Remedy Standard A. §§350.31 and350.32	
Closure in Place	Waste in unit—Controls only (e.g., final cover) or controls used with removal/decontamination. §§350.2(h), 350.31(a) and (j), and 350.33(a)(1)	YES**
	Release—Remove, decontaminate or control environmental media to meet Remedy Standard B. §§350.31 and 350.33	

* A long-term response action for a release can be included in a permit/compliance plan as a corrective action rather than post-closure care if the response action is not completed at time of permitting.

** Post-closure care requirements for controls (e.g., final cover inspection and maintenance and detection groundwater monitoring) of waste closed in place will be determined exclusively by RCRA regulations. TRRP post-response action care requirements can be applied to releases.

Clean closure means that a unit has been taken out of service (closed) and that the general closure performance standard (40 CFR §264/265.111) has been met by use of removal or decontamination techniques, as opposed to closure with waste left in place. Complying with §350.32(a) meets federal removal/decontamination criteria for hazardous waste. When clean closure is complete, all hazardous waste has been removed from the unit. Any releases at or from the unit are at levels protective of human health and the environment without use of physical controls, as determined by Remedy Standard A. Acceptance of certification of a clean closure terminates regulation as a hazardous waste unit in that permitting or post-closure care will not be required.

Closure in place means that a unit has been taken out of service and that the general closure performance standard has been met by use of controls only or any combination of removal, decontamination or control. This approach is typically used for units intended for disposal, such as landfills, or any other unit that fails to attain clean closure, such as a storage surface impoundment. The portion of the unit in which hazardous waste remains in place will require a physical control such as a final cover (cap). The cover must satisfy the unit-specific requirements of 40 CFR Parts 264/265 when closing in accordance with the closure and post-closure care requirements that apply to landfills, and §§350.31(a) and 350.33(a)(1) of TRRP. A release from a unit closing in place can be addressed with the options for response actions of Remedy Standard B.

A RCRA unit may also attain a change-in-status closure where the unit is taken out of hazardous waste service and put into non-hazardous service. To take the unit out of hazardous waste service and return it to non-hazardous service, clean closure must be attained. The main difference is that the unit will still be serviceable at the end of the closure process.

Closure Procedures

The actual mechanics of unit closure (what you do to remove, decontaminate or control the waste in the unit) are essentially the same under TRRP as under the existing RCRA closure process. In contrast, the procedural requirements of the closure process will vary depending on the regulatory status of the unit and whether there is a release. Figures 1 and 2, found at the end of this section, further illustrate how the TRRP requirements mesh with the RCRA closure process.

Closure of Units without Release

The closure process for units without a release will in general involve these basic steps:

- Demonstrating no release has occurred from the unit;
- Meeting RCRA/TRRP closure performance standards and the applicable unit-specific RCRA requirements;
- Conducting closure in accordance with an approved closure plan, if applicable; and
- Submitting the program-required closure notice and certification to TCEQ.

Figure 1 separates units into those that are exempt from permitting (< 90 day accumulation time units: tanks, container storage areas, drip pads, containment buildings) in contrast to those that are not exempt, as seen in Figure 2. The exempt units are not subject to the same procedures as the other units in that closure plans are not required to be submitted for approval prior to conducting closure. TRRP does require a 10-day advance notice of confirmation sampling. If sampling or other data confirms that no release has occurred, simply submit a closure certification that documents attainment of the closure performance standard by removal or decontamination and that a release has not occurred. Analysis of samples of environmental media (soil, groundwater) for COCs is the preferred method of demonstrating no release. Other methods may be used in specific situations based on the unit design and manner of operation, subject to program area considerations. Examples of documentation include the following:

- Sampling of environmental media
- Operator knowledge
- Inspection records and operating logs
- Sampling of secondary containment media
- Equipment integrity testing records
- Rinsate sampling after decontamination
- Reconciliation of inventory

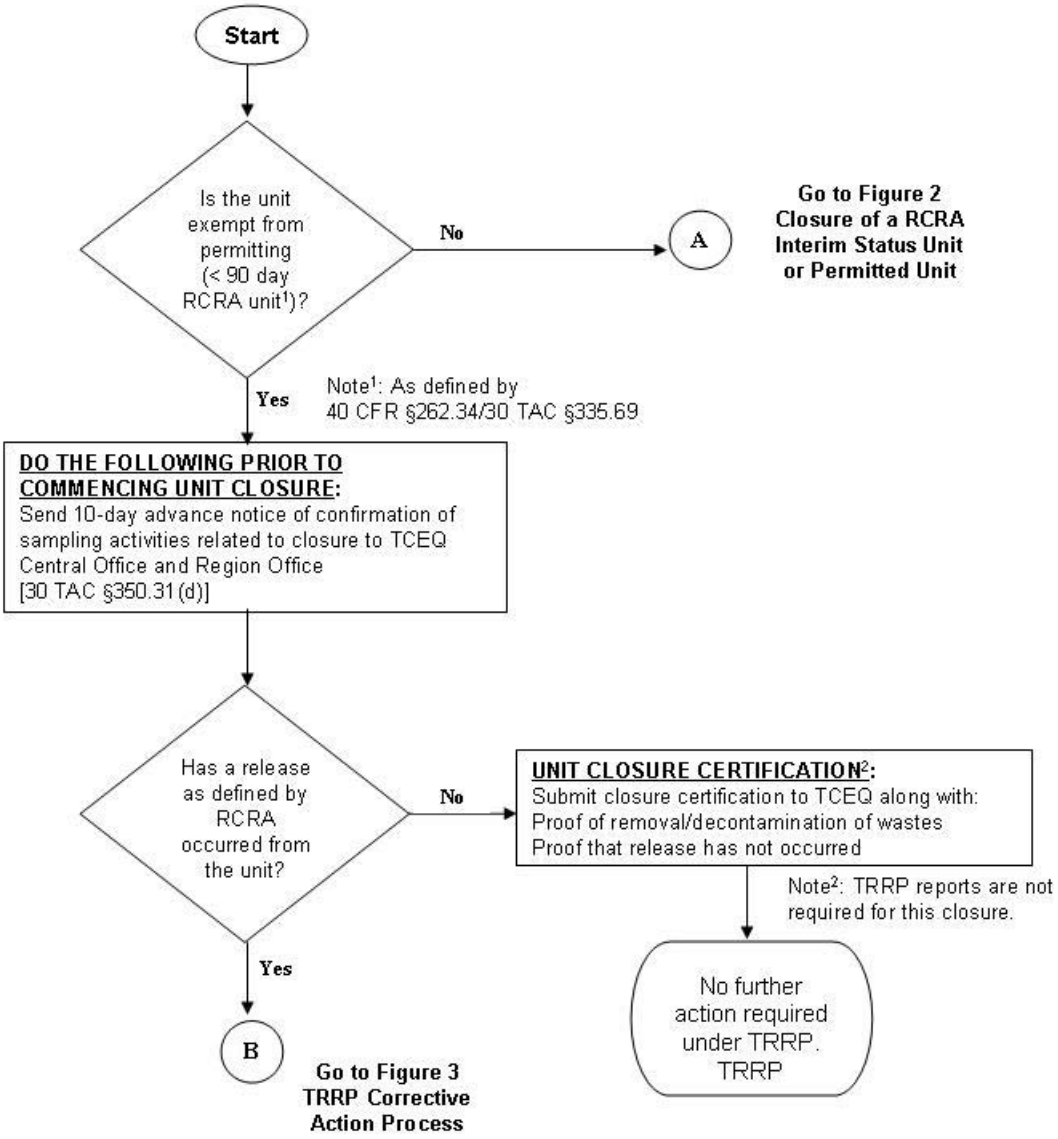


Figure 1. Closure of a <90-day RCRA unit

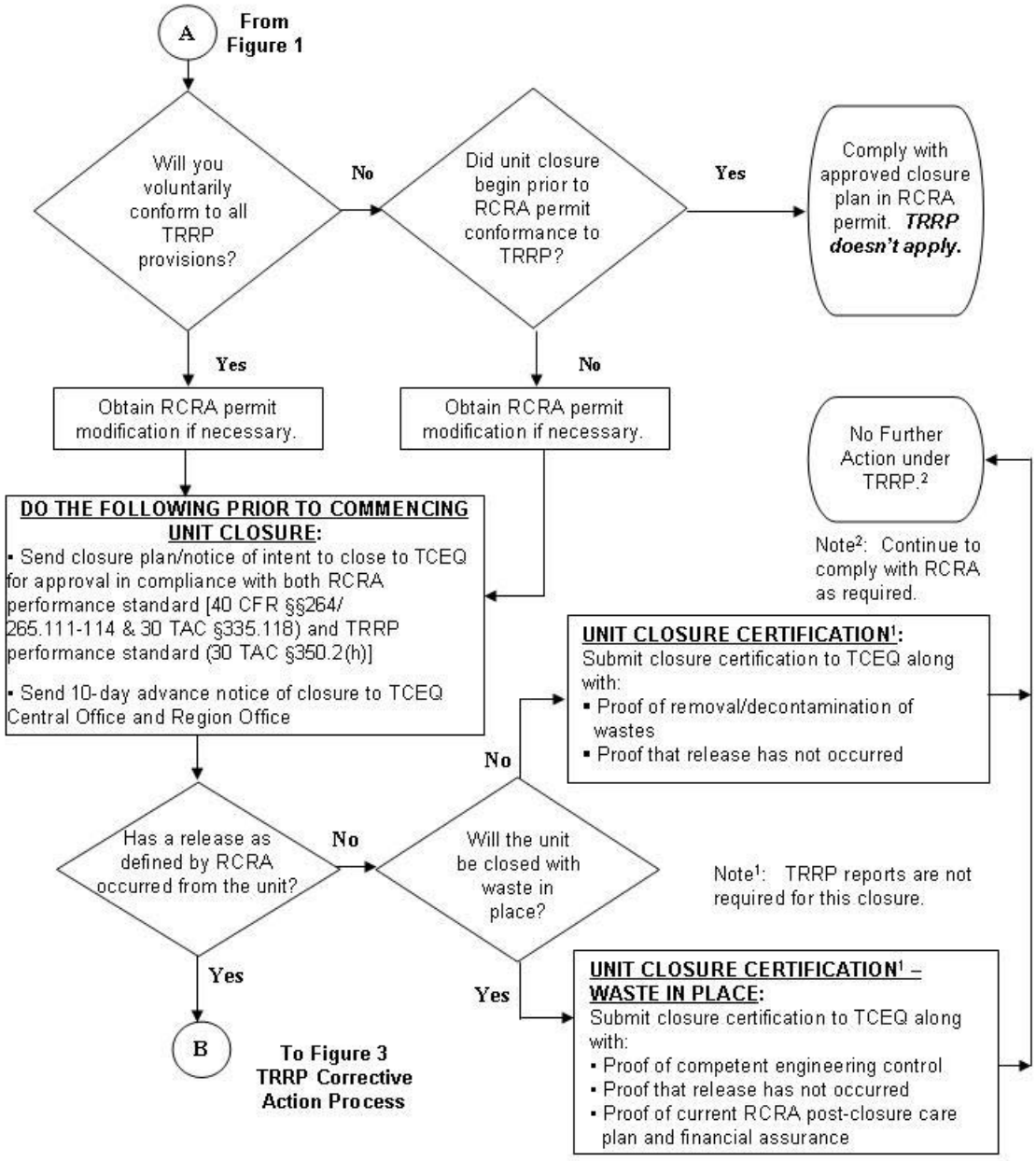


Figure 2. Closure of a RCRA interim status unit or permitted unit

Figure 2 addresses storage, treatment and disposal units subject to permitting, either under interim status standards of 40 CFR Part 265 or permitting standards of 40 CFR Part 264 as reflected in permit-specific provisions. The administrative requirements for these units include review and approval of closure plans in advance of closure. The approval of the closure plan for interim status units is a part of the notification process if a RCRA Part B permit application has not yet been approved. An interim status plan approved under previous rules can be revised at any time to conform to TRRP. Revisions to plans previously approved as part of a permit must be authorized by a permit modification. See the RCRA Permit Modifications section of this document for types of

modifications. If closure has already commenced prior to the permit being conformed to TRRP, complete the closure according to the closure plan approved in the permit. When carrying out the approved closure plan and making the appropriate notification of confirmation sampling, determine if a release from the unit has occurred. As with permit-exempt units described in Figure 1, if sampling or other data indicate a release has not occurred, submit a closure certification that documents attainment of the closure performance standard by removal or decontamination and that a release has not occurred.

Closure of Units with Release

The closure process for units with a release will in general include these basic steps:

- Meeting RCRA/TRRP closure performance standards and the applicable unit-specific closure requirements;
- Conducting closure in accordance with an approved closure plan, if applicable; and
- Completion of a response action to attain either Remedy Standard A or B for the release.

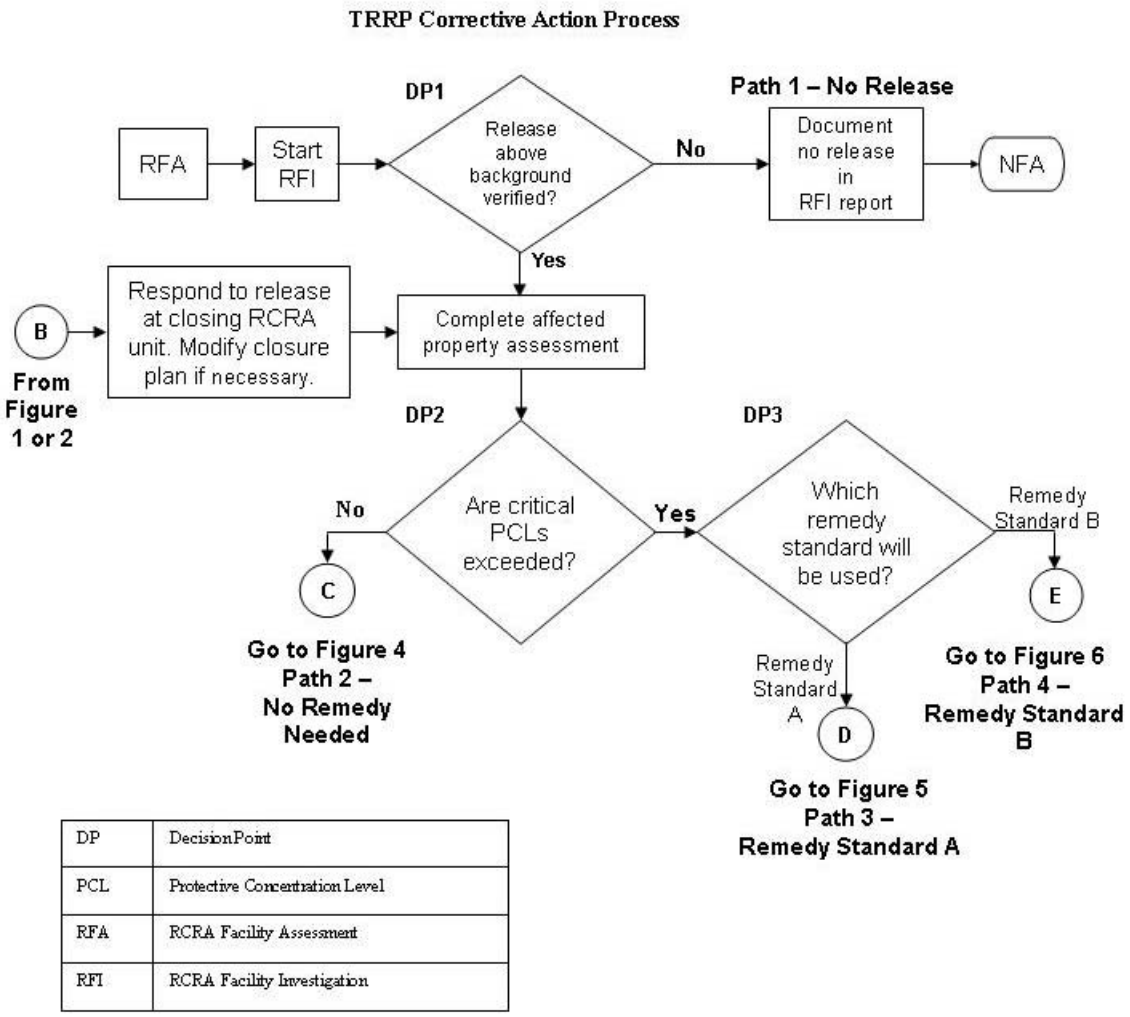
As indicated on Figures 1 and 2, if sampling or other data indicate a release has occurred, proceed to Figure 3. At this point, a release associated with a closing unit is handled in the same manner as a response action for a release from a solid waste management unit (SWMU), that is, attain Remedy Standard A or B for the affected property. For permit-exempt units that do not require closure plans in advance, submit a TRRP Self-Implementation Notice or Response Action Plan, as appropriate, to initiate a response action for the release. For all other RCRA units, modify the closure plan if it does not already include a Response Action Plan for the release. To complete the closure with a release, provide the appropriate TRRP reports (e.g., Affected Property Assessment Report, Response Action Completion Report) as part of the closure documentation. Clean closure, even with a release, is achieved by attaining Remedy Standard A. Depending on the severity of the release, units, including those which are permit-exempt, should finish closure with TCEQ-approved post-closure care or corrective action requirements (e.g., 40 CFR §264.100) if utilizing Remedy Standard B. Units utilizing long-term remedies, such as monitored natural attenuation that ultimately will achieve Remedy Standard A, can end up in a permit or compliance plan for corrective action if closure is not complete at the time of facility permitting. Given the variety of possible outcomes for closures with releases, be sure to include contingencies within the closure plan to address a release using the remedy standards of TRRP. This will simplify the approval of revisions, particularly for closure plans approved as part of the RCRA permit.

Additional Closure Topics

Table 2 lists additional closure topics to aid users in complying with the TRRP and RCRA closure requirements.

Table 2. Additional Closure Topics

Topic relating to RCRA closure under TRRP	Conclusion - TRRP Compatibility with RCRA
Time allowed for closure	RCRA determines the required closure time (40 CFR §264/265.113). Any additional time needed for accomplishing a closure under TRRP must be addressed in the approved RCRA closure plan.
Public Notice	To obtain closure plan approval, a RCRA unit closure plan must comply with the public notice requirements under RCRA (40 CFR §264/265.112(d)(4)) as modified by the TCEQ public notice rules (§335.118). Additionally, notice to land owners and others, including people actually or probably exposed, regarding the results of assessment for COCs on affected property of the closing facility component, must be done to comply with TRRP (§350.55).
Financial Assurance	Financial assurance established in accordance with RCRA requirements (40 CFR §264/265.140, 142-145) is sufficient to comply with TRRP requirements. Also, follow 40 CFR requirements for annual inflation adjustment. TRRP does not require financial assurance under Remedy Standard A (§350.32(g)) but TRRP does require it for post-closure care under Remedy Standard B (§350.33(l)-(m)) when a physical control is used. Financial assurance must be in a form that satisfies 30 TAC Chapter 37. Options or exemption within Remedy Standard B for a reduced amount or duration of financial assurance will not comply with RCRA requirements.
Closure Certification	Permitted and interim status RCRA units that have completed closure must submit closure certification required under RCRA 40 CFR §264/265.115. This will comply with TRRP which only has a general certification requirement in §350.2(a) of "performed and documented to the reasonable satisfaction of the executive director." RCRA units that are exempt from permitting (<90-day units) must notify the TCEQ 10 days in advance of closure activities, and must document and report closure activities. This report is made in a manner that complies with RCRA program requirements.
Institutional Controls	The time frame for filing an institutional control following certification of closure for a RCRA unit under TRRP (§350.31(g) and §350.111) is 90 days vs. the 60-day requirement under RCRA (40 CFR §264/265.119). To utilize the 90-day time frame, be sure to request it as a part of the closure plan for approval which may require a permit modification.



DP	Decision Point
PCL	Protective Concentration Level
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation

Figure 3. TRRP corrective action process

RCRA Permit Modifications

Closure plans adopted as part of a RCRA permit issued prior to May 1, 2000 should be followed until permit renewal or modification to incorporate TRRP. At the time of permit renewal, closure plans that have been initiated will be grandfathered automatically. See TCEQ guidance document *Applicability and Grandfathering* (RG-366/TRRP-2). However, closure plans that have not yet been initiated upon permit renewal will be conformed to TRRP. Outlined in Table 3 is the TCEQ's plan to incorporate the TRRP rule into new and renewal RCRA permit applications currently under review based on the stage of the permit process.

Table 3. TRRP Implementation Plan for Permits

Stage of the Permit Process	Action required to implement TRRP
Final Draft Permit (FDP) stage prior to processing by the Chief Clerk's office	**TCEQ** will revise the FDP to add a provision that requires closure to be in accordance with TRRP and then **YOU** must modify the closure plan prior to closure via a permit modification as necessary. The class of modification is dependent on complexity of revisions.
Applications received by TCEQ prior to May 1, 2000 and application up through Initial Draft Permit stage	Once contacted by the TCEQ through notice of deficiency (NOD) or other means, **YOU** must revise the closure plan to address TRRP and submit the revised closure plan to TCEQ in response to NOD.
Applications received by TCEQ *after* May 1, 2000	**YOU** must submit an application that includes a closure plan that conforms with the requirements of TRRP.

You may elect at any time to revise your closure plan to conform to TRRP provided that you modify your RCRA permit. The Notice of Intent to Switch to TRRP (NOIST) form can be submitted at the same time or prior to the submittal of the RCRA permit modification. However, once you switch to TRRP you may not switch back.

Table 4 shows possible permit modification scenarios for conversion of existing, authorized permits to conform with TRRP. These determinations for class of modification are based on equivalency of the TRRP remedy standard to the standard in the current closure plan in an individual permit and the criteria for establishing permit modification classes given in 40 CFR §270.42(d)(2).

30 TAC §350.2(a) stipulates that "All actions undertaken and demonstrations required by this chapter must be performed and documented to the reasonable satisfaction of the executive director." Therefore, voluntary conversion of any RCRA permit to conform with the requirements of TRRP will require, at a minimum, a Class 1[1] permit modification.

Table 4. Permit Modification Scenarios

From RRR Standard	To TRRP Remedy Standard	Class of Permit Modification (defined below)	Comments
1	A	1[1] or 2	Std 1 requires closure to background. If Remedy Standard A is equivalent to background, then a Class 1[1] modification will be required. Should Remedy Standard A be greater than background, then a Class 2 permit modification is appropriate.
2	A - Res	1[1] or 2	Std 2 requires an institutional control; Remedy Standard A – residential does not. Therefore, if an institutional control requirement is modified, a Class 2 modification would be appropriate. Conversely, voluntary placement of an institutional control for Remedy Standard A - residential needs only a Class 1[1] modification.
2	A - C/I	1[1]	Std 2 and Remedy Standard A - commercial/industrial both are risk-based and have institutional controls. TRRP conformance is equivalent to the original objective of the closure plan.
1 or 2	B	3	Remedy Standard B allows controls (e.g., cap) in lieu of complete cleanup; therefore, a Class 3 modification would be appropriate.
3	B	1[1]	Std 3 and Remedy Standard B both are risk-based, have institutional controls, and can require physical control. Remedy Standard B is equivalent to the original objective of the closure plan.
Pre-RRR	A or B	1[1], 2, 3	Pre-RRR standard was either background or close in place. Plans often stated both. Evaluate on a case-specific basis.

Determinations for the class of modification required are from 40 CFR §270.42(d) and are defined as follows:

- Class 1[1] [40 CFR §270.42(d)(2)(i)]: "These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In case of Class 1 modifications, the Director may require prior approval."
- Class 2 [40 CFR §270.42(d)(2)(ii)]: "Class 2 modifications apply to changes that are necessary to enable a permittee to respond, in a timely manner to … changes necessary to comply with new regulation, where these changes can be implemented without substantially changing design specifications or management practices in the permit."
- Class 3 [40 CFR §270.42.(d)(2)(iii)]: "Class 3 modifications substantially alter the facility or its operation."

In evaluating the class of permit modification required, the retention of specific closure plan provisions from a RRR closure plan may allow a lower class of permit modification to be pursued when conforming that closure plan to TRRP. For example, the retention of background concentrations as the closure criteria when converting a RRR Standard 1 plan to a TRRP Remedy Standard A plan would retain equivalency and hence would require only a Class 1[1] modification. Another situation might involve a closure plan with multiple closure options (e.g., RRR Standards 1, 2 and 3), all of which had been publicly noticed. Conversion of the RRR plan to a TRRP Remedy Standard A plan would then require only a Class 1[1] modification. Similarly, when converting from a RRR Standard 2 closure that requires an institutional control to a TRRP Remedy Standard A (residential) that does not, a Class 1[1] modification would be appropriate

when the provision to file an institutional control was voluntarily retained in the new TRRP closure plan.

Corrective Action

Regulated Unit Corrective Action

A regulated unit is a land disposal unit (surface impoundment, landfill, land treatment unit) that was required to conduct interim status groundwater monitoring and received waste or closed after the effective dates (generally in 1982) of the permitting standards of 40 CFR Part 264. These units were then subject to the more rigorous groundwater monitoring and corrective action requirements of §§335.156–166, which formed the basis for specific provisions in the facility's hazardous waste permit. The regulated unit could be required to conduct detection monitoring, compliance monitoring or corrective action, depending on the presence or absence of hazardous constituents in the groundwater. In Texas, the provisions for compliance monitoring and groundwater corrective action are separated from the main text of the permit and are placed in a separate document known as the compliance plan. If the regulated unit is covered by a compliance plan, then comply with its monitoring, reporting and other programmatic provisions which are based on RCRA requirements. The corrective action performance objectives can be modified to conform with the TRRP remedy standards. The primary interface between RCRA and TRRP requirements for regulated units is the groundwater protection standard which is to be attained at the point of compliance, as discussed below.

Points of Compliance

The point of compliance is defined as a vertical surface, located at the hydraulically downgradient limit of the waste management area or regulated unit, that extends down into the uppermost aquifer. In practical terms, it is a series of monitor wells at which the groundwater protection standard applies. This standard, specified in the compliance plan and based on §§335.158-162, can be a background concentration, a maximum contaminant level (MCL), or an alternate concentration limit (ACL). The approved TRRP PCLs can be used as the accepted, derived ACLs without conducting further consideration under §335.160(b). To achieve Remedy Standard A, critical groundwater PCLs may be used as the ACLs. For situations under Remedy Standard B, such as the plume management zone (PMZ), an attenuation action level (AAL) may be used as an ACL, a value not to be exceeded at the point of compliance well that is protective of the point of exposure (POE) located downgradient of either the extent of the groundwater protective concentration level exceedance (PCLE) zone or, if authorized, a PMZ. See TCEQ guidance document *Soil and Groundwater Response Objectives* (RG-366/TRRP-29) for guidance on PMZs. When complying with RCRA and TRRP, present the derivation of

the critical PCL or AAL used as ACLs as part of the compliance plan application or modification. The derivation of the critical PCL may be documented by referencing the APAR from which it was obtained.

SWMU Corrective Action Process

Many RCRA permits contain provisions that direct you to conduct corrective action for releases from solid waste management units (SWMUs). SWMUs are designated in your RCRA permit based on the findings of the RCRA Facility Assessment (RFA), an initial step in the conventional RCRA corrective action process. The RFA occurs prior to application of the TRRP rule and equates to the program's designation of a release or that more information is needed before a release can be determined. Table 5 lists other reports required by the corrective action process and also shows where applicable the corresponding reports required by TRRP. All TCEQ permit and compliance plan provisions for corrective action issued prior to promulgation of the TRRP rule are based on the sequence of RCRA reports as depicted in the table.

Table 5. RCRA/TRRP Corrective Action Reports Comparison

RCRA	TRRP	Comments
RCRA Facility Assessment (RFA)	None	Identify and select SWMUs with known release and SWMUs with likelihood of release and list in permit for investigation.
RCRA Facility Investigation (RFI)	None	Determine if a release has occurred. If no, document results in the RFI report per RCRA program requirements.
	Affected Property Assessment Report (APAR)	If yes, then investigate in detail to determine the nature and extent of COCs released to environmental media per TRRP and document results in the APAR.
Corrective Measures Study (CMS)	None	Evaluate various cleanup options, solicit public comments on the preferred option and select a final method.
Corrective Measures Implementation (CMI) Work Plan	Response Action Plan (RAP)	Design and plan response action.
CMI Report and Progress Reports	Response Action Completion Report (RACR)/ Response Action Effectiveness Report (RAER)/ Post-Response Action Care Report (PRACR)	Construct, operate, maintain, and monitor the effectiveness of selected remedy. Provide post-response action care reporting.

By promulgating the TRRP rule, the TCEQ intended that its provisions would substitute for determining the nature and extent of the release during the RFI and all requirements of the CMS and CMI, unless the compliance plan or administrative order under which the corrective action is required imposes different requirements. For instance, a response action plan based on Remedy Standard A cannot be self-implemented as normally allowed by TRRP because permit provisions require the CMI work plan to be reviewed prior to approval. The TCEQ is

now integrating the TRRP rule into this pre-existing regulatory framework since most permits and compliance plans contain requirements based on the RCRA structured approach and the earlier Risk Reduction rule (30 TAC Chapter 335). Newly issued permits/compliance plans, or existing ones when modified, will more closely reflect the TRRP process.

Figure 3 depicts the possible pathways to completion of the corrective action process as currently conducted by the TCEQ. Major document submittals are indicated in both TRRP and RCRA corrective action process terminology. The figure does not indicate all points in the process where public notification or permit modifications are required as these are additional program requirements not addressed by TRRP. Note that §350.2(h) directs you to use §335.118(b) or to follow applicable permit provisions regarding requirements for public participation in the corrective action process. For example, selection and approval of a final remedy could entail a Class 3 permit modification. See the EPA document RCRA Public Participation Manual (EPA 530-R-96-007, September 1996) for more details. Many permitted RCRA facilities in Texas have progressed past the initial RFI phase. If the decision has been made to complete the corrective action program under the TRRP rule, be aware that a RCRA permit/compliance plan or order modification may be required. Class of permit modification should be discussed in advance with TCEQ. Also, the RFI and the report are initially conducted as required by RCRA. TRRP is applicable only after a release has been verified. Much of the RFI information can be used to satisfy the requirements for the APAR. The APAR may require additional site-specific information if Tier 2 or 3 is used for PCL development.

Corrective Action Process

Figure 3 maps out several paths that the corrective action process can take, depending on the conclusions made at various decision points. Starting with the SWMUs listed in the permit as a result of the RFA, determine during the RFI if a release is verified by using quantitative techniques as specified in the permit.

Decision Point 1: Release Verified?

Decision Point 1 (Release Verified?) separates SWMUs based on a verified release of COCs. In the corrective action process, a release is typically verified if COCs exceed background concentrations. If no release is indicated, proceed along Path 1.

Path 1: No Release

Path 1 (No Release) leads straight to no further action (NFA) status. Document the analytical results according to the program-specific

requirements demonstrating that no release has occurred and recommend NFA. SWMUs proceeding down this path are not subject to TRRP.

If not directed to Path 1, then the release is subject to TRRP. Continue evaluating the verified release by completing the TRRP affected property assessment. Closures with an associated release from Figures 1 and 2 will enter the corrective action process at the point noted as "B." This is an appropriate step in the process to determine if a permit modification is necessary to authorize a closure plan revision that will address the response action beyond this point. Upon completing the affected property assessment, proceed to Decision Point 2.

Decision Point 2: Are Critical PCLs Exceeded?

Decision Point 2 (Are Critical PCLs Exceeded?) separates SWMUs based on COC concentrations exceeding TRRP critical PCLs. If critical PCLs are exceeded (i.e., a remedy is reguired), proceed on to Decision Point 3. If not, follow Path 2.

Decision Point 3: Which Remedy Standard Will Be Used?

Decision Point 3 (Which Remedy Standard will be used?) separates SWMUs based on whether a planned response action will achieve Remedy Standard A or Remedy Standard B. Follow Path 3 (Remedy Standard A) or Path 4 (Remedy Standard B) depending on which remedy standard is chosen.

Path 2: No Remedy Needed

Path 2 (No Remedy Needed) is shown on Figure 4. If COCs are present at concentrations less than the critical PCLs, existing conditions will satisfy Remedy Standard A without using removal or decontamination. Document these findings in the APAR, complete any notifications required by TRRP (§350.55) and propose NFA. An extra step is involved for Remedy Standard A commercial/ industrial sites which must file an institutional control and submit proof thereof before achieving NFA status. If closing a RCRA unit, complete the unit closure certification by including appropriate documentation of the response to the release. Note that the documentation differs depending on the type of unit and manner of closure. If the unit is closed with waste in place, even though the release does not require a response action, RCRA post-closure care requirements will continue to apply.

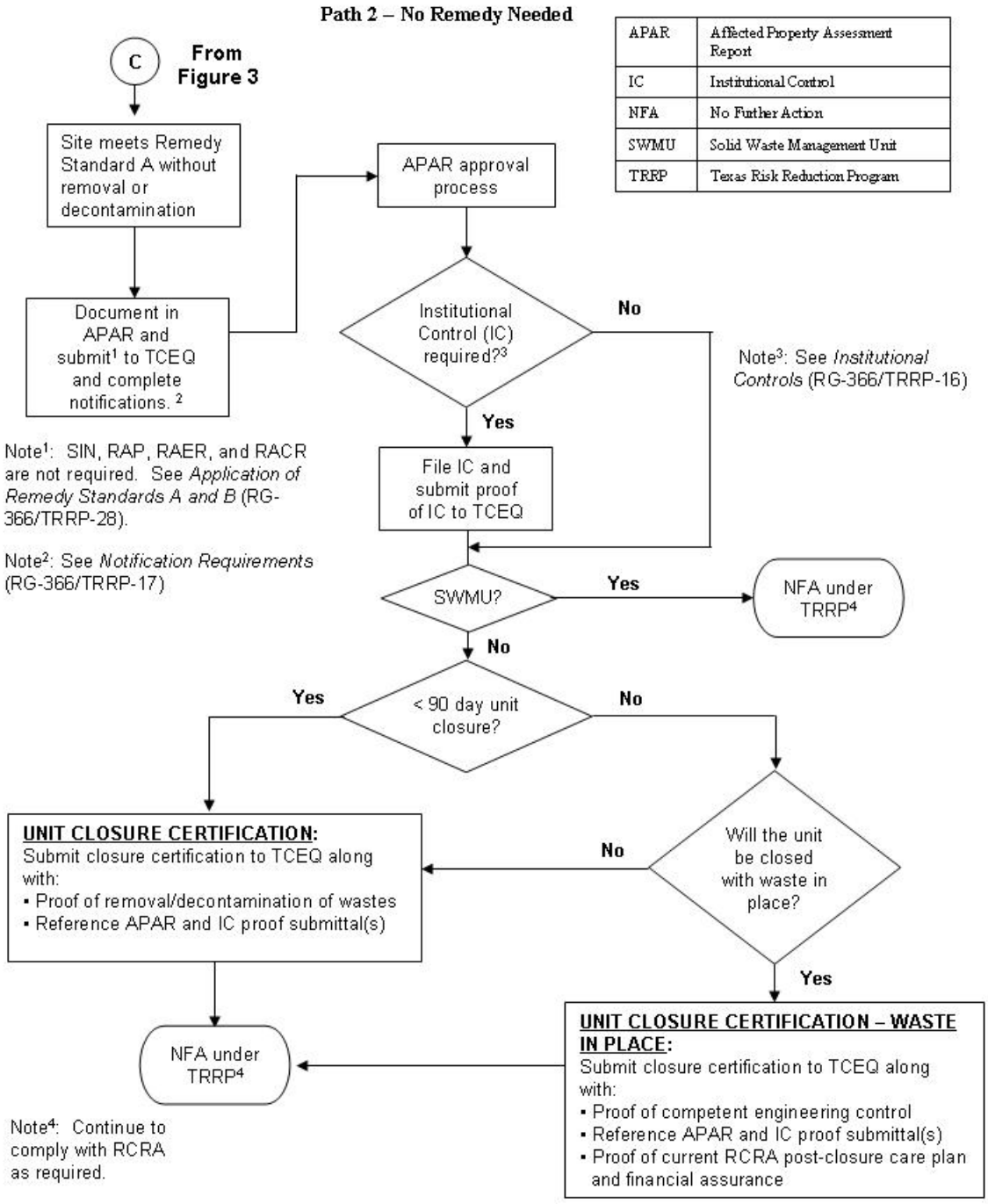


Figure 4. TRRP corrective action process for Path 2 (no remedy needed)

Path 3: Remedy Standard A

Path 3 (Remedy Standard A) is shown on Figure 5. To proceed down Path 3, a permit or compliance plan modification does not have to be obtained. After opportunity for public input, the RAP can be approved by the TCEQ. Submit Response Action Effectiveness Reports (RAERs) if the remedy completion takes longer than 3 years. After receipt of approval for the Response Action Completion Report (RACR), the affected property meets NFA status for Remedy Standard A residential sites. For all other situations, submit proof of filing the institutional control within 90 days of agency approval of the RACR. As with Path 2, closure of a RCRA unit will require additional documentation of the response action to complete the unit closure certification, specifically, include or refer to the APAR, RAP, RACR, and if used the RAER and institutional control. Note that long-term remediation may require a modification of the compliance plan to incorporate appropriate monitoring and reporting provisions.

Path 4: Remedy Standard B

Path 4 (Remedy Standard B) is shown on Figure 6. To proceed down Path 4 for SWMUs or permitted units, obtain a Class 3 modification of the compliance plan for approval of the RAP. Other situations (orders, closures not in a permit) can be approved by the TCEQ. Submit the financial assurance mechanism for a planned physical control within 90 days of approval of the RAP. Submit RAERs if the remedy completion takes longer than 3 years. Approval of the RACR places the SWMU in a status of conditional NFA, reflecting that the remedy is in place, controls must be maintained and effectiveness must be monitored. At this stage, the post-response action care (§350.33(g)) and financial assurance requirements of TRRP apply. Submit proof of filing of the institutional control within 90 days of approval of the RACR. Continue to submit Post-Response Action Care Reports (PRACRs) until the response action satisfies §350.33(i) (regarding criteria to demonstrate that post-response action care is no longer necessary) and NFA status is attained. As with Paths 2 and 3, closure of a RCRA unit will require additional documentation of the response action to complete the unit closure certification, specifically, include or refer to the APAR, RAP, RACR, institutional control, PRACR and if used the RAER.

Facility Operations Area

Under TRRP (30 TAC 350 Subchapter G), the Facility Operations Area (FOA) presents an option to the SWMU-by-SWMU approach to corrective action. This option is limited to active petroleum refining or chemical manufacturing facilities that have a RCRA permit or corrective action order requiring corrective action as of the effective date of the TRRP rule, September 23, 1999. If a facility meets certain qualifying criteria

(§350.134), all the SWMUs within the active manufacturing area can be combined into a single area-wide response action.

By incorporating elements of exposure prevention and alternate points of exposure, a phased approach interim remedy can be developed that is protective for the duration of the active manufacturing operation. Compliance with full TRRP provisions within the FOA can be deferred until the cessation of manufacturing operations, with the exception of any RCRA regulated units, as discussed above. This optional approach does not include SWMUs located outside the FOA; all other provisions of TRRP and corrective action requirements will apply there. The FOA option does not apply to releases that extend past the FOA boundary. For a full discussion on how to apply for the FOA authorization, see TCEQ guidance document *Facility Operations Area* (RG-366/TRRP-34).

If your facility meets the FOA qualifying criteria, complete a FOA application and submit a Class 3 modification to an existing RCRA permit/compliance plan, or obtain a commission corrective action order if no RCRA permit has been issued, and meet the requirements in §§350.134 and 135. The FOA is subject to review at the time of renewal of the RCRA permit/compliance plan or commission corrective action order for any changed conditions in response to §350.35, or to review at any time for changes in the facility's qualifying criteria. If there are no such changes, the authorization will continue until the end of active manufacturing operations.

There are some RCRA requirements that will continue to apply to the FOA. For example, RCRA regulated hazardous waste units that must comply with the groundwater corrective action requirements of 40 CFR §264.100 (e.g., hazardous waste landfills) must still meet these requirements in a FOA. Such units may be able to set alternate concentration limits based on the point of exposure set at the FOA boundary. Financial assurance for the FOA is required for both TRRP and RCRA purposes. The amount of financial assurance that would normally be required for SWMU corrective action without a FOA can serve as the minimum initial amount for FOA purposes.

"Contained in" Determinations

Generally, under the RCRA regulations, contaminated environmental media (soils, groundwater, surface water and sediments) containing hazardous waste are subject to all applicable RCRA requirements until demonstrated that they no longer contain the hazardous wastes. EPA considers contaminated environmental media to no longer contain hazardous waste when the media no longer exhibit a characteristic of a hazardous waste and when concentrations of COCs from listed hazardous wastes are below health-based levels. Testing the media for these conditions is known as a "contained in" determination. The TRRP rule, as

indicated at §350.2(h)(3), can be used to perform a "contained in" determination. A typical situation involves managing contaminated media generated during a RCRA closure or remediation and making decisions about appropriate disposal or reuse.

In certain circumstances, the RCRA land disposal restrictions (LDRs) will continue to apply to contaminated media that has been determined not to contain hazardous waste. The likely scenarios when this will occur are summarized in Table 6. A more detailed summary of the relationship between "contained in" determinations and LDRs is found in the EPA document titled Management of Remediation Waste Under RCRA, EPA530-F-98-026, October 1998. So, a decision about managing contaminated media is a two-step process: first, make the contained in determination; second, determine if the planned management (disposal, reuse, relocation) is limited by the LDRs.

Making a "Contained in" Determination

To determine that a given volume of soil or other media does not contain hazardous waste, use an appropriate sampling program to demonstrate that COC concentrations in the soil do not exceed applicable TRRP Tier 1 PCLs for residential land use. Additionally, leachate tests such as the Synthetic Precipitation Leaching Procedure (SPLP) may be used to show that COCs will not impact the underlying groundwater. This determination may be self-implemented by completing the applicable portions of a Response Action Completion Report (RACR) as described in §350.95, addressing the applicable LDR standards, revising the Notice of Registration if applicable, and submitting all this information to the TCEQ.

If your plan is to utilize Tier 2 or Tier 3 PCL development, commercial/industrial land use, or other leachate test methods, submit a proposal in advance for approval. For example, the ^{GW}Soil PCL can be modified at Tier 2 by utilizing site-specific soil properties to adjust the soil-leachate partition factor (K_{sw}) in the PCL equation. Soil type, pH, porosity, bulk density, and f_{oc} are examples of the chemical/physical and affected property parameters that can be varied from the default values used in Tier 1. While a Tier 2 ^{GW} Soil PCL is protective for the place of origin, if relocated, the soil must also be shown to be protective for a new location.

Soil Reuse

The TRRP rule allows for relocation of soils for reuse purposes in §350.36 which sets standards for this purpose when the soil contains COCs at concentrations above naturally-occurring background concentrations. Not all instances of soil excavation are subject to this provision. For example, construction activities in an affected property that necessitate soil

removal, such as installation, repair, or removal of telephone lines or other utilities, and the subsequent replacement of those soils into the same excavation does not constitute soil reuse or relocation. However, this section also points out that soil relocation may be subject to additional requirements or limitations, such as those circumstances when hazardous soils are excavated and destined for reuse by placement on land. [*For the purpose of this discussion, hazardous soils are defined as soils that contain a listed hazardous waste and/or exhibit a hazardous characteristic.*] Hazardous soils are considered "generated" for the purpose of RCRA, when they are excavated, and the LDRs attach to the excavated soils if they are to be placed on land. When relocation to land occurs (i.e., land disposal under RCRA), the "generated" hazardous soils and the site where they are to be relocated must meet both the requirements of TRRP and of RCRA. PCLs must be protective of the new location and can be based on Remedy Standard A or B.

Table 6 covers most of the hazardous soils scenarios that could occur and identifies critical RCRA/TRRP obstacles to soil reuse.

Table 6. "Contained In" Determinations, LDRs and Soil Reuse Obstacles

No.	Hazardous Soil Circumstances	RCRA	TRRP
1	Hazardous soils do not meet LDR standards.	May not be placed on land unless LDR exempt.	TRRP does not apply since LDRs prohibit land placement.
2	Hazardous soils treated to meet LDRs but still exhibit hazardous characteristic.	May go to RCRA Subtitle C land disposal facility without further treatment.	Must decharacterize soils and meet critical PCLs before reuse.
3	Hazardous soils treated to meet LDRs and decharacterized.	May go to RCRA Subtitle D facility.	Must also meet critical PCLs before reuse.
4	Hazardous soils meet "contained in" criteria but do not satisfy LDR requirements.	LDRs still applicable, go to RCRA column for rows 2 and 3.	If LDRs are less than critical PCLs, treat to LDRs before reuse.
5	Hazardous soils meet "contained in" criteria and meet LDR treatment criteria.	No longer subject to RCRA.	Must meet critical PCLs for new location.

Examples of hazardous soils reuse where the above circumstances may occur include the following:

- High-clay-content soils placed in the core of a levee to impart structural stability during construction or repair, and in such manner do not present a potential for exposure;
- Soils used for landfill cover (landfill acceptance criteria could apply); and
- Soils used for roads, ditches and general maintenance at operating plants, and in such manner exposure potential can be minimized or controlled (e.g., surface runoff is subject to a surface water discharge permit).

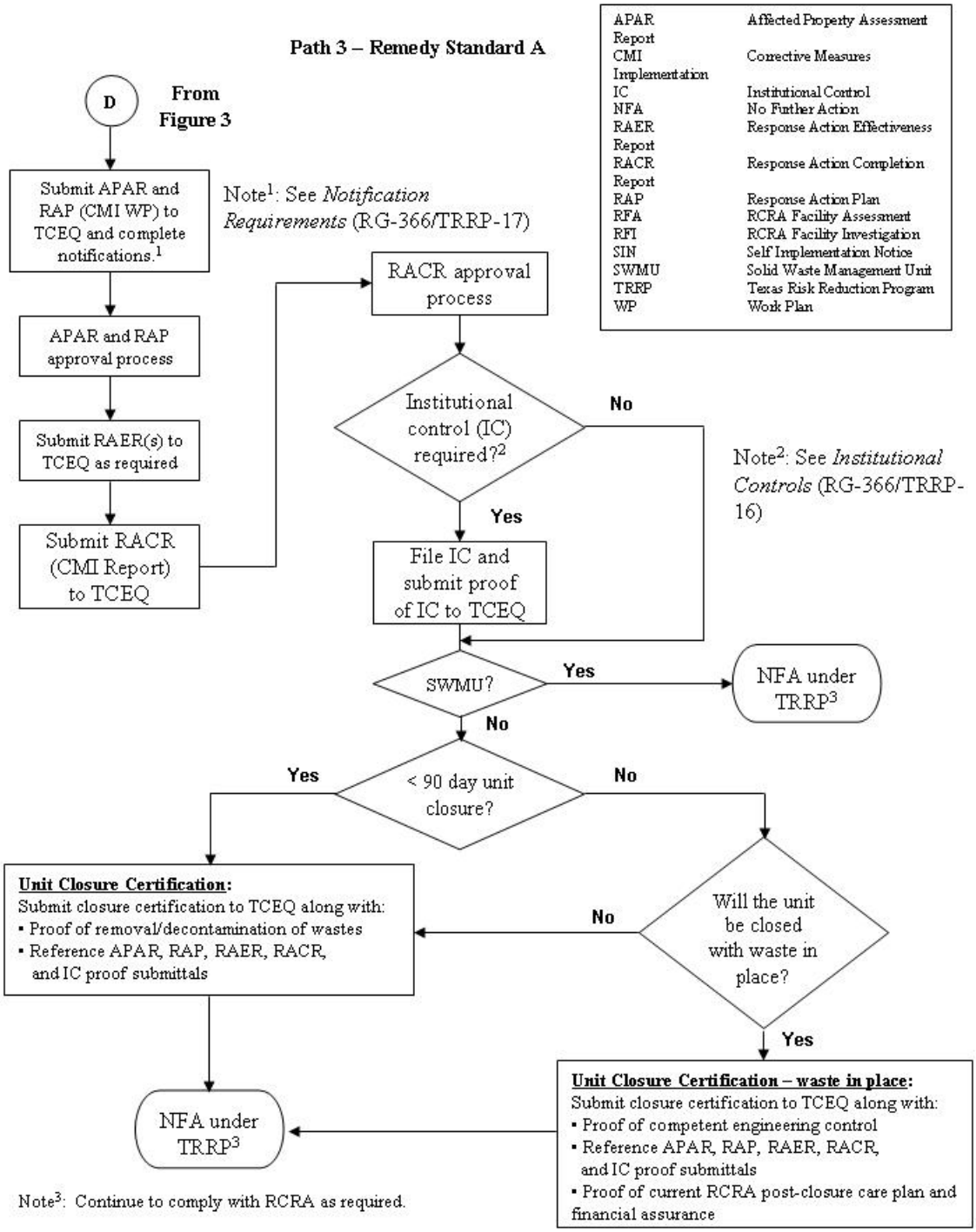


Figure 5. TRRP corrective action process for Path 3 (Remedy Standard A)

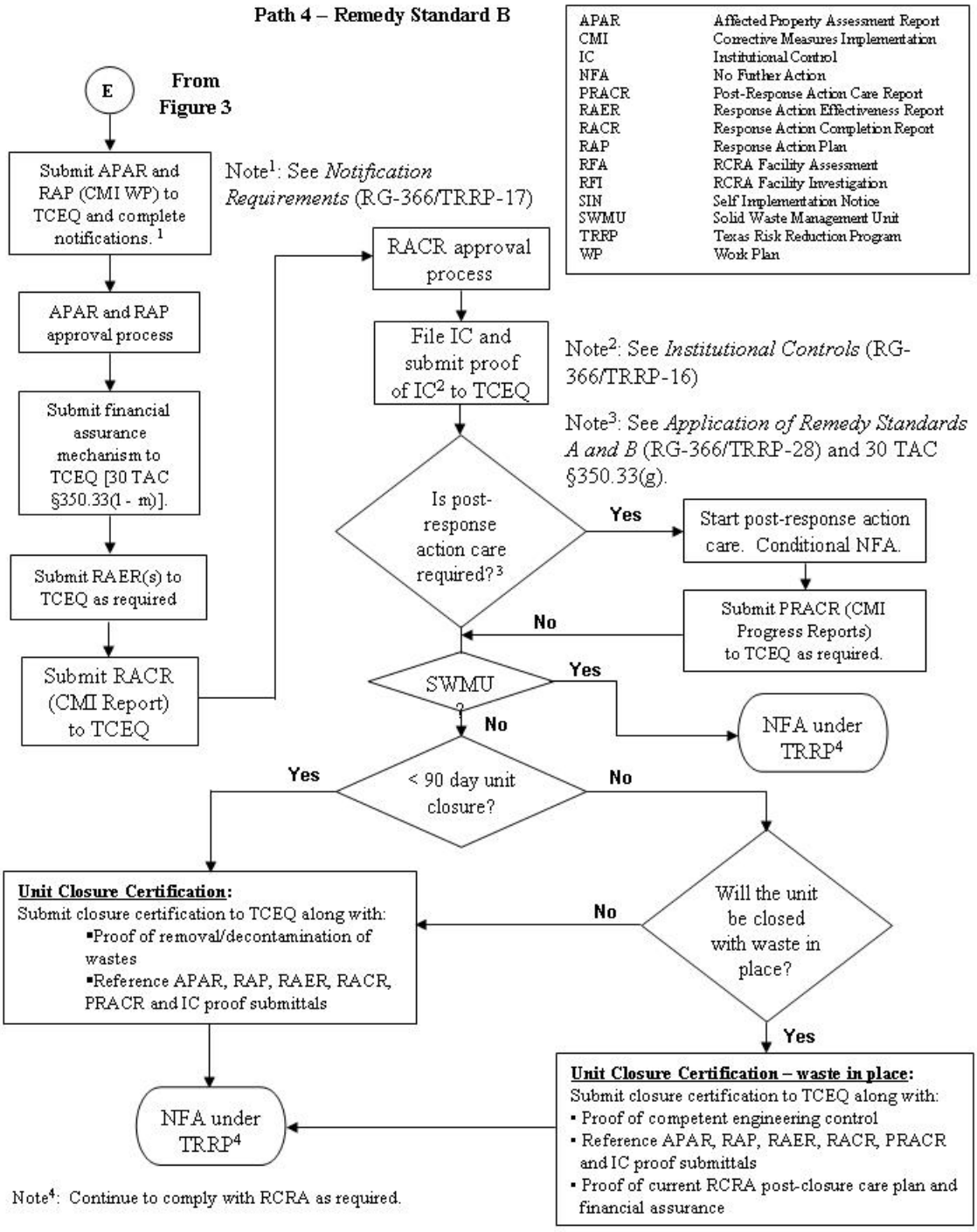


Figure 6. TRRP corrective action process for Path 4 (Remedy Standard B)