2.1 INTRODUCTION

The **Missouri Risk-Based Corrective Action** (MRBCA) process begins after a contaminated site has been identified. The process includes all subsequent department-approved activities needed to ensure that the site does not pose an unacceptable risk to human health, public welfare or the environment, including any necessary **long-term stewardship** (LTS) requirements if residual contamination remains on site. The MRBCA process consists of the following three steps:

- **Site characterization** and delineation of impacts to soil, groundwater, surface water, sediments, and soil vapor to the extent necessary based upon site-specific considerations. Site characterization information is used to develop a **conceptual site model**, which will lead to the development of an **exposure model**;
- **Risk assessment** conducted at the Tier 1, Tier 2, or Tier 3 level. Risk assessment culminates in the estimation of risk and, as appropriate, the development of **risk-based target levels** for the environmental media impacted by **chemicals of concern** (COCs) at the site. The assessment of risk involves determining the **exposure pathway** and the **route of exposure.** The route of exposure is the manner in which the COC enters the receptor. The exposure pathway is the course a chemical takes from a source of contamination to the **receptor**. A receptor is an organism that receives, may receive, or has received exposure to a COC as a result of a release. (These terms and others are defined in Appendix L and discussed more completely throughout the guidance.) The results of the risk assessment are used to determine and implement the nature and scope of site-specific risk management activities; and
- **Risk management** activities that protect human health, public welfare and the environment under current and reasonably anticipated future uses on and near the site by ensuring that any unacceptable risks identified by the risk assessment are managed. Risk management activities include any necessary remediation activities and any LTS activities needed to guarantee that, for as long as residual contamination on site remains above unrestricted use levels, there would be knowledge of and adherence to the terms of the risk assessment.

Figure 2-1 illustrates these steps. Although the process is fundamentally technical and relies on a variety of scientific disciplines (such as geology, hydrology, engineering, chemistry, toxicology and land use planning), it also uses assumptions and policy choices that must be consistent with state and federal laws and regulations. This section is an overview of the process; subsequent sections provide more detail on each step.

2.2 RISK-BASED CORRECTIVE ACTION PROCESS

The decision-making process for a site where contamination is suspected or discovered is illustrated in Figure 2-2 and discussed below.

2.2.1 Site Discovery

The department may learn about a contaminated site under a variety of circumstances. Some of these are:

- Citizen complaints,
- Investigations conducted as a part of real estate transactions,
- Investigations conducted in anticipation of land development,
- Environmental impacts observed in surface water bodies,
- Site inventories developed by the department, and
- Notification of accidents and spills.

Various federal statutes and regulations administered by the department (such as RCRA and CERCLA) impose notification and public participation requirements on responsible parties. This document does not change any of the responsibilities or obligations to notify the appropriate state and federal agencies in accordance with specific authorities.

The process of site discovery and notification is further discussed in Section 3.0.

2.2.2 Determination and Abatement of Imminent Threat(s)

Upon discovery that a site may contain potential contamination, all available information must be carefully evaluated to determine if the site poses any imminent threat to human health, safety or the environment. If any imminent threats are discovered, the department must be informed immediately. The state statute for spill reporting is commonly known as the "Spill Bill" and is found in Sections 260.500 through 260.550 RSMo.

If the department or the responsible party/remediating party identifies any imminent threat to human health, safety or the environment, the department may require the person having control over the hazardous substance to clean up the hazardous substance and take any reasonable actions necessary to end a hazardous substance emergency.

If requested, a written report must be submitted to the department that documents the activities and confirms that all imminent threats have been abated. The responsible party may also be requested to include recommendations for any additional work necessary for the continued protection of human health and the environment.

In the majority of hazardous substance releases handled by the department, the responsible party conducts a cleanup and the site is closed. If the site is not closed, the responsible party may be required to perform an *Initial Characterization*. If the release is a hazardous substance emergency, the responsible party is required to conduct emergency response actions to mitigate the impact to public health and the environment. The responsible party may be required to perform an *Initial Characterization* as part of an emergency response action.

Determination and abatement of imminent threat(s) are further discussed in Section 4.0.

2.2.3 Initial Site Characterization and Comparison with Default Target Levels

After completion of any emergency response actions or time-critical removal actions, or upon site discovery if no emergency action is necessary, the remediating party must perform an ***Initial Characterization***. The objective is to identify with certainty the maximum concentrations of the COCs in each impacted environmental media and compare these concentrations with **default target levels** (DTLs) and Water Quality Criteria (WQC) (10 CSR 7.031). DTLs are the levels necessary to quantify and protect receptors from all complete exposure pathways for unrestricted use.

Characterization includes collection of media-specific data for all media of concern to characterize the source(s) and concentrations of site related chemicals. This step focuses fieldwork (drilling of wells, collection of soil, soil vapor, or groundwater samples, etc.) to identify the maximum concentrations of COCs in the affected media. The level of effort (number of sampling points, etc.) necessary for an adequate initial characterization is dependent upon site-specific conditions.

Impacts should be delineated to DTLs or other levels necessary to protect the receptors from complete routes of exposure. For example, at a non-residential site with appropriate activity and use limitations, the delineation criteria may be to non-residential risk-based target levels. Or, if an ecological threat exists, delineation must be to the level protective of the ecological receptor.

However, for sites that may require additional characterization or remediation, it may be more cost effective at this point to delineate the nature and extent of impacts rather than only identifying the highest concentrations. Proposed additional characterization should be included in the site characterization work plan.

The initial characterization should result in identification of the impacted environmental media at a site, the point or points of release, the COCs, and the location and maximum concentrations of the COCs. If, during the course of investigation, the analytical detection limit for any COCs is higher than the corresponding Default Target Level, Section 5.3 provides further guidance.

The maximum COC concentrations are then compared with the DTLs. If discharge from the site results in potential migration to any water body, then state water quality standards must also be considered. If the maximum soil and groundwater concentrations do not exceed the DTLs and if the site poses no ecological risk, the remediating party may petition the department for a Letter of Completion. Under these conditions, the department will issue the Letter of Completion and no activity or use limitations will be required regardless of how the site may be used.

Because the department will make its final decision based on a comparison with acceptable risk or WQC values, the data available for the comparison must accurately represent the maximum media-specific COC concentrations. The term "maximum concentration" refers to the current maximum concentration of a COC. At sites where additional releases or significant migration may have occurred since samples were last collected, new data may be necessary to represent current conditions. Also, concentrations of all COCs may not have reached maximum concentrations in a particular media (usually groundwater) because of travel time. In the latter case, additional monitoring in the future may be necessary to ensure that DTLs will not be exceeded, and therefore further activities would be necessary.

If the maximum soil or groundwater concentrations exceed the DTLs or any applicable water quality criteria, the remediating party may either adopt DTLs and/or water quality criteria as the cleanup levels and develop a risk management plan to achieve those levels, or perform a tiered risk assessment.

Initial characterization and comparison with default target levels is further discussed in Section 5.0.

2.2.4 Eco-Risk Analysis

To determine if an ecological risk exists at a site at the Default Target Level, it is necessary to use Table 5-1. Table 5-1 provides Water Quality Criteria that are lower for ecological species than the MRBCA Default Target Levels (DTLs) for human health protection, and therefore it must be checked at the DTL evaluation. If any site COCs exceed the levels in Table 5-1, then the remediating party must begin the eco-risk screening evaluation to determine if an ecological receptor exists.

At Tier1 through Tier 3, a screening evaluation is required. Level 1 of this evaluation refers to the screening level evaluation that uses Checklists A and B to determine whether any ecological receptors may be present and of concern.

A Level 2 ecological evaluation would be performed if the Level 1 evaluation indicates the presence of ecological receptors that may be exposed to site-specific chemicals. It involves the comparison of site concentrations with relevant published concentrations protective of ecological receptors.

A Level 3 ecological evaluation may be required when the Level 2 evaluation indicates the potential for adverse ecological impacts as evidenced by an exceedance of published concentrations or a lack of appropriate published concentrations. The remediating party must develop a work plan to conduct an ecological risk assessment and submit for approval by the department prior to its implementation. An ecological risk assessment at this level would include the development of alternative site-specific criteria protective of existing and potential uses. Such development and implementation of alternative site-specific criteria would satisfy the requirements of Missouri's Water Quality Standards for protection of groundwater found at 10 CSR 20-7.031(5)(D).

The Ecological Risk Assessment levels used to evaluate the site are independent of the human-health-based tier assessments. In other words, a Tier 1 risk assessment could include a Level 3 Ecological Risk Assessment. Conversely, a Tier 3 Risk Assessment could be completed in conjunction with a Level 1 Ecological Risk Assessment.

2.2.5 Development and Validation of Conceptual Site Model

If the maximum concentrations of COCs exceed the DTLs or the DTLs are not selected as the cleanup levels, the remediating party would next develop and validate a **conceptual site model**. A conceptual site model qualitatively and/or quantitatively describes all the relevant site-specific factors that determine the risk to human health and the environment and is the framework for management of a site. The conceptual site model should be documented using narrative descriptions, diagrams and flow charts as appropriate. It may include attachments such as well logs, boring logs, monitoring well construction details, and laboratory reports. The conceptual site model should be revised as new site-specific information is collected and integrated into the understanding of the site.

Key elements of the conceptual site model include:
1. The chemical release scenario, source(s), and COCs,
2. Spatial and temporal distribution of COCs in the various affected media,
3. Current and future land and groundwater use,
4. Description of any known existing or proposed land or water use restrictions,
5. Description of site stratigraphy, determination of vadose zone soil type, hydrogeology, meteorology, and surface water bodies that may potentially be affected by site COCs,
6. Remedial activities conducted to date, and
7. An exposure model that identifies the receptors, exposure pathways and routes of exposure under current and future land use conditions.

An essential component of the conceptual site model is to determine if the domestic use of groundwater is a complete pathway under current or future conditions. Domestic use of groundwater includes ingestion, dermal contact, and inhalation of vapors generated by indoor water use activities such as showering and washing.

The extent of contamination and complete routes of exposure, not the property boundaries, determine the extent of site-specific data collection and analysis.

Data collection activities and data quality objectives must satisfy the development and refinement of the conceptual site model and exposure models.

Data needs to develop a conceptual site model are further discussed in Section 6.0 and Appendix K.

2.2.6 Tier 1 Risk Assessment

If the maximum soil or groundwater concentrations exceed the DTLs, the remediating party may choose to complete a Tier 1 Risk Assessment in lieu of cleanup to the DTLs. Tier 1 provides risk-based target clean-up levels based upon the receptor, land use, soil type and pathway. Ecological risk is addressed as stated in Section 6.

For the MRBCA process, the acceptable risk levels are:

Carcinogenic Risk

- The total risk for each chemical, which is the sum of risk for all complete exposure pathways for each chemical, must not exceed 1×10^{-5}.
- The cumulative site-wide risk (sum of risk for all chemicals and all complete exposure pathways) must not exceed 1×10^{-4}.

Non-carcinogenic Risk

- The hazard index for each chemical, which is the sum of hazard quotients for all complete exposure pathways for each chemical (the total risk) must not exceed 1.0.
- The site-wide hazard index, which is the sum of hazard quotients for all chemicals and all complete exposure pathways, must not exceed 1.0.

If the hazard index exceeds 1.0, a qualified toxicologist may calculate the hazard index corresponding to a specific toxicological end point. In this case, the specific hazard index for each toxicological end point must be less than unity (1.0).

A Tier 1 risk assessment involves:

1. Determination of predominant vadose zone soil type,
2. Determination of site COCs
3. Selection of relevant **Tier 1 risk-based target levels** from lookup tables developed by the department,
4. Determination of whether it is necessary to estimate cumulative site-wide risk to account for multiple chemicals and multiple exposure pathways, and
5. Comparison of relevant risk based target levels with representative concentrations of site COCs.

Tier 1 risk-based target levels will be selected for predominant site-specific vadose zone soil type, each COC, each complete pathway, and each media of concern identified in the exposure model and, if necessary, modified to account for the cumulative site-wide risk. Tier 1 risk-based target levels are based on default input parameters and are presented in Appendix B.

Based on the comparison of representative concentrations and Tier 1 risk-based target levels, the remediating party can make any one of the following three decisions:

1. Request a determination from the department that the residual COC concentrations are protective of human health, public welfare and the environment,
2. Adopt Tier 1 risk-based target levels as the cleanup levels and prepare and/or submit a

Risk Management Plan to manage the risk associated with these levels, or
3. Perform a Tier 2 risk assessment.

Upon completion of the Tier 1 risk assessment, the remediating party must provide a Tier 1 Risk Assessment Report to the department. If the remediating party chooses to immediately perform a Tier 2 risk assessment, the Tier 1 and Tier 2 assessments may be combined into a single report that is submitted to the department at the conclusion of the Tier 2 assessment.

If the remediating party concludes that the concentration of COCs are protective of human health, public welfare and the environment and requests a Letter of Completion from the department, the request must be supplemented with a long term stewardship plan unless residual concentrations meet unrestricted use levels.

The Tier 1 risk assessment is further discussed in Section 8.0.

2.2.7 Tier 2 Risk Assessment

Tier 2 risk assessments allow for the use of site-specific fate and transport parameters to calculate site-specific risk-based target levels.

In preparation for a Tier 2 risk assessment, additional data should be collected and the exposure model should be revised as needed. Tier 2 **site-specific target levels** are calculated values based on site-specific data such as the nature and extent of contamination and physical characteristics of the site.

After the Tier 2 site-specific target levels have been calculated, they are compared with representative COC concentrations at the site. Depending on the comparison, the remediating party can make any one of the following three decisions:
1. Request a determination from the department that the residual concentrations are protective of human health, public welfare and the environment,
2. Adopt calculated Tier 2 site specific target levels as cleanup levels and/or develop a risk management plan to manage the risk associated with these levels, or
3. Develop a work plan for a Tier 3 risk assessment.

Upon completion of the Tier 2 risk assessment, the remediating party must provide a Tier 2 Risk Assessment Report to the department.

The Tier 2 risk assessment is further discussed in Section 9.0.

2.2.8 Tier 3 Risk Assessment

A Tier 3 risk assessment allows considerable flexibility in managing risk at a contaminated site. Because of the many options available at Tier 3, the department requires that a work plan be submitted and approved prior to the performance of a Tier 3 risk assessment.

Once Tier 3 site-specific target levels have been developed, they are compared to representative COC concentrations. Depending on the comparison, the remediating party can make either of the following two decisions:

1. Request a determination from the department that the residual concentrations are protective of human health, public welfare and the environment, or
2. Adopt Tier 3 site-specific target levels as cleanup levels and/or develop and implement a Risk Management Plan.

Upon completion of the Tier 3 risk assessment, the remediating party must provide a Tier 3 Risk Assessment Report to the department.

The Tier 3 risk assessment is further discussed in Section 10.0.

2.2.9 Development and Approval of Risk Management Plan

The objective of all Risk Management Plans is to protect human health, public welfare and the environment under current and future conditions. Typically, a Risk Management Plan will be developed after the department approves media-specific cleanup levels under any of the tiers (DTLs, Tier 1, Tier 2, or Tier 3 levels). In certain cases, the media-specific cleanup levels may be developed as a part of the Risk Management Plan. The Risk Management Plan may include a combination of active and passive remedial options, a description of and schedule for all remedial activities, **activity and use limitations** (AULs), and reports to be submitted. To the extent needed to protect human health, public welfare and the environment, the plan may include:

1. Remedial technology(ies),
2. Long term stewardship plan, including any proposed AULs and justification for their use,
3. Estimate of the time needed to implement the Risk Management Plan,
4. Monitoring plan to verify the effectiveness of the Risk Management Plan,
5. Manner in which the monitoring data will be evaluated,
6. Monitoring action levels that would require reevaluation of the effectiveness of the Risk Management Plan, and
7. Steps that will be taken if the Risk Management Plan is not effective.

2.2.10 Implementation and Completion of Risk Management Plan

The Risk Management Plan must then be implemented as written and approved. During implementation of the Risk Management Plan, sufficient data must be collected and analyzed to evaluate the performance of the plan and, if needed, to implement modifications. The data and the evaluation must be submitted to the department. If the Risk Management Plan is not progressing as planned and changes are needed, a proposal for modifying the plan must be submitted to the department for approval. Modifications cannot be implemented without the prior approval of the department.

Risk Management Plan activities must continue until the department determines that, based on

site-specific data, cleanup goals (DTLs, Tier 1, Tier 2, or Tier 3 levels) have been met, specified AULs are in place, and risks have been appropriately managed. The Risk Management Plan must include a commitment to maintain the AULs for as long as is necessary to ensure protection of human health, public welfare and the environment - that is, as long as residual concentrations exceed unrestricted use levels. The department will issue a **Letter of Completion** that indicates that, based on the MRBCA evaluation and information available to the department at the time, conditions at the site and any controls in place are protective of human health, public welfare and the environment.

In the future, additional information may become available that the site poses an unacceptable risk to human health, public welfare or the environment or that the land use has changed and is no longer compatible with the risk management plan. In either of these cases, the department may rescind its Letter of Completion and require further action at the site.

Long-term stewardship and the Risk Management Plan are further discussed in Sections 11.0 and 12.0, respectively.

2.2.11 Long Term Stewardship

Long term stewardship (LTS) is the system of controls, institutions and information required to ensure protection of human health, public welfare and the environment at sites where residual contamination has been left in place above unrestricted use levels.

Examples of long-term stewardship tools include:
- Engineering or physical controls,
- Proprietary controls such as covenants where the control is legally a property interest,
- Government controls such as the implementation of zoning and well drilling restrictions,
- Informational devices such as deed notices and databases, and
- Activity and use limitations.

Activity and use limitations (AULs) may be an integral part of long-term stewardship, and, if needed, would be part of the Risk Management Plan. AULs should be designed to ensure that pathways of exposure to COCs, through current or reasonably anticipated future uses, are not completed for as long as the COCs pose an unacceptable risk to human health, public welfare or the environment. To achieve this goal, AULs must be durable, reliable, enforceable and consistent with the risk posed by the COCs. Without compromising their protective function, AULs are also intended to facilitate the property transaction, redevelopment and beneficial reuse of brownfields and other contaminated properties.

In the Missouri risk-based process, the following general principles apply.
- Activity and use limitations are required for any site where COC concentrations exceed levels that are safe for unrestricted use.
- The future uses of sites may be limited, permanently or temporarily, by restrictive covenants or other means, and risk management plans may be developed based on limited future site uses.

- The use of engineering or physical controls in a Risk Management Plan will be accompanied by legal controls to ensure the controls are inspected and maintained.
- Activity and use limitations can be removed if COC concentrations no longer exceed unrestricted use levels.

2.3 RISK-BASED TARGET LEVELS WITHIN THE MRBCA PROCESS

Under the MRBCA process, any of the following four target levels may be accepted as the cleanup levels.

1. **DTLs** and some WQC are the most conservative chemical and medium-specific concentrations that allow unrestricted use of the property. For each COC and each medium, the DTL is the lowest of the Tier 1 risk-based target levels. Because DTLs are the most conservative values, their application does not require evaluation of site-specific exposure pathways, the development of a conceptual site model, any activity and use limitations, or the determination of whether groundwater is used or is likely to be used for domestic consumption.

2. **Tier 1 risk-based target levels** are calculated concentrations developed by the department using conservative default parameters that depend on the predominant vadose zone soil type, receptor, media, pathway, route of exposure and domestic use or likely use of impacted or threatened groundwater. The Tier 1 risk-based target levels presented in Appendix B should be evaluated to ensure that cumulative site-wide risk does not exceed the acceptable risk level of 1×10^{-4} or a Hazard Index of 1. Use of Tier 1 risk-based target levels may require AULs.

3. **Tier 2 site-specific target levels** are values that are calculated using site-specific data and this technical guidance. Tier 2 site-specific target levels differ from Tier 1 risk-based target levels in that the Tier 2 site-specific target levels are based on site-specific fate and transport parameter values, whereas the Tier 1 risk-based target levels use default fate and transport parameters. For each receptor, additivity of risk (for each chemical and each route of exposure) and cumulative site-wide risk (for all chemicals and all routes of exposure) must be considered. Typically, but not always, Tier 2 site-specific target levels will be higher than Tier 1 risk-based target levels. As with Tier 1 risk-based target levels, AULs may be required.

4. **Tier 3 site-specific target levels** are also values that are calculated using data collected at the site and the guidelines in this document. However, compared with Tier 2 site-specific target levels, Tier 3 site-specific target levels may be based on the application of fate and transport models and different exposure scenarios other than those used to calculate the Tier 1 risk-based target levels and Tier 2 site-specific target levels. Additivity of risk and cumulative site-wide risk must be considered. The application of Tier 3 site-specific target levels may also require the use of AULs.

Table 2-1 compares the different tiers within the MRBCA framework. However, as an

analysis moves from DTLs through the tiers, if the target cleanup levels become lower, the remediating party does not have the option of using higher levels from the previous tier. The higher tier target levels are based on site-specific information and hence are expected to be a more accurate representation of potential risks at the site. Different sections of the site may be managed using different risk-based target levels and different AULs.

2.4 RATIONALE AND CHARACTERISTICS OF TIERED APPROACH

Despite the differences between the three tiers, there is one very significant similarity: *each tier will result in cleanup target levels that provide an acceptable level of protection to human health, public welfare and the environment.* Thus the process provides considerable flexibility and a variety of options to manage site-specific risks. The remediating party working with the department can thus select the optimal strategy.

As a site moves through the tiered process, the following can be anticipated:

- Higher tiers will require the collection of more site-specific data, which will increase data collection, data analysis, and labor costs.
- In general, the calculated Tier 2 site-specific target levels will be higher than the Tier 1 risk-based target levels and Tier 3 site-specific target levels will be higher than Tier 2 risk-based target levels. This is because lower tier target levels were calculated using more conservative assumptions than higher tier target levels. Thus, the cost of risk management activities at higher tiers should generally be lower.
- The need for, and the extent of, regulatory oversight and review will increase as the site moves from Tier 1 to Tier 2 and then Tier 3.
- The level of uncertainty and conservatism will decrease from Tier 1 through Tier 3 due to the availability of more site-specific data.

2.5 DOCUMENTATION OF THE MRBCA PROCESS

To make decisions that protect human health, public welfare and the environment, the MRBCA process requires the collection and analysis of a considerable amount of data. In addition, a variety of stakeholders – for example, state agencies, landowners, developers, lending agencies, and local governments – may be interested in the outcome of the MRBCA process. Therefore, the process by which data is collected and analyzed and by which decisions are made must be as transparent as possible through adequate and clear documentation.

The method and format by which the remediating party reports data from the MRBCA process also must be consistent across the state and unambiguous so that stakeholders can readily understand the:

- Data collected to quantify and analyze the problem,
- Nature and extent of the problem at a site,
- Process used to develop a plan of action to address the problem,
- Sequence of actions taken to address the problem,
- Results of the actions taken, and

- Conclusion that actions taken are protective of human health, public welfare and the environment under current and reasonably anticipated future use conditions.

For reference, reports that may be required in the MRBCA process, but not necessarily so, are listed below. Note that specific authorities, such as RCRA or CERCLA, use different reporting titles and formats.

- Determination and Abatement of Imminent Threats,
- Initial Characterization and Data Collection Work Plan,
- Initial Characterization Report,
- Site Characterization and Data Collection Work Plan,
- Tiered Risk Assessment Report (Tier 1, 2, or both),
- Tier 3 Work Plan,
- Tier 3 Risk Assessment Report,
- Risk Management Plan, or
- Completion of Risk Management Plan.

Table 2-1
Comparison of Risk Assessment Options

Factors	DTL	Tier 1	Tier 2	Tier 3
Exposure Factors[1]	Default	Default	Default	Site-specific
Toxicity Factors[1]	Default	Default	Default	Most current
Physical and Chemical Properties[1]	Default	Default	Default	Most current
Fate and Transport Parameters[1]	Default	Default	Site-specific	Site-specific
Unsaturated Zone Attenuation	Depth to water table dependent	Depth to water table dependent	Depth to water table dependent	Site-specific model
Fate and Transport Models	Default	Default	Default	Alternative
Comparative Concentrations	Maximum	Representative Concentrations-See Appendix C	Representative Concentrations-See Appendix C	Representative Concentrations-See Appendix C
IELCR for Each Chemical & ROE	1×10^{-5}	1×10^{-5}	1×10^{-5}	1×10^{-5}
Hazard Quotient for Each Chemical & ROE	1	1	1	1
Site-wide IELCR	1×10^{-4}	1×10^{-4}	1×10^{-4}	1×10^{-4}
Site-wide Hazard Index	1	1	1	1
Domestic Use of Groundwater Pathway if Complete	MCL or equivalent	MCL or equivalent	MCL or equivalent	MCL or equivalent
Ecological Risk	Compare with WQC in Table 5-1	Evaluate	Evaluate	Evaluate
Outcome of Evaluation	LOC, Tier 1, RMP	LOC, Tier 2, RMP	LOC, Tier 3, RMP	LOC, RMP
Land Use	No	Yes	Yes	Yes
Activity and Use Limitations	None	Depend on land use, groundwater use, and other assumptions in risk assessment		

DTL: Default Target Level
LOC: Letter of Completion
ROE: Route of Exposure
IELCR: Individual Excess Lifetime Cancer Risk
MCL: Maximum Contaminant Level
RMP: Risk Management Plan
WQC: Water Quality Criteria

[1] Refer to Appendix E

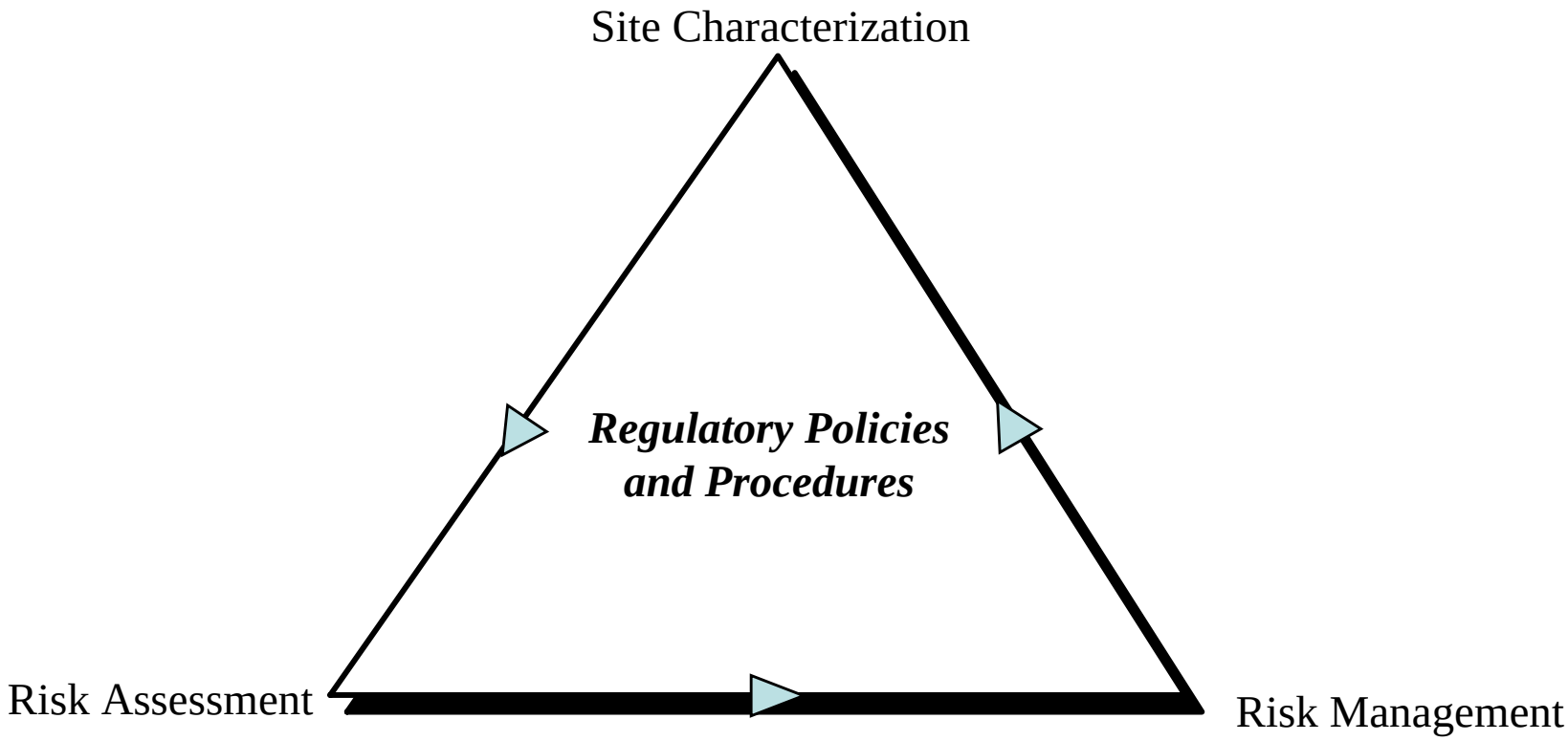
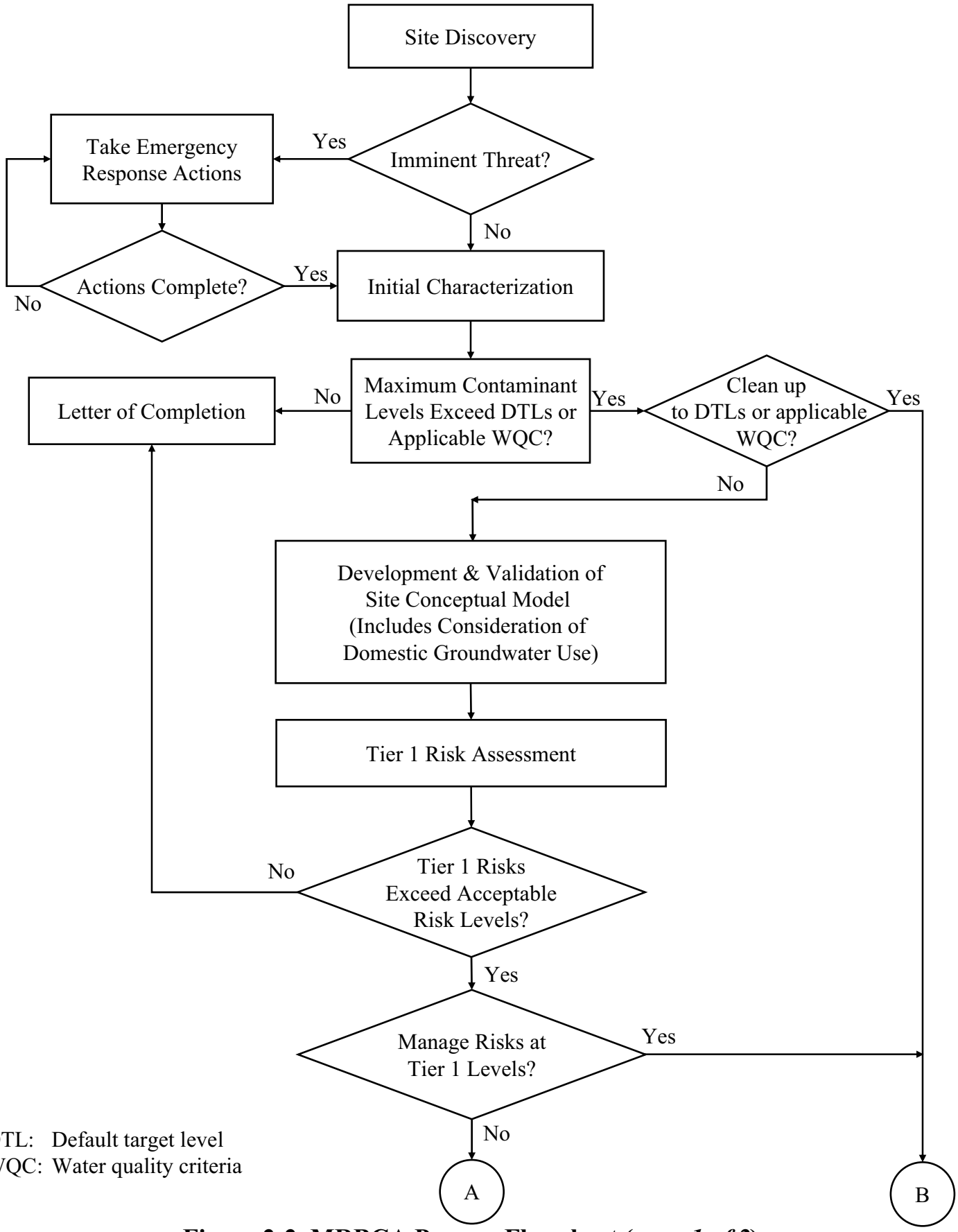


Figure 2-1. Key Activities Conducted under the MRBCA Process



DTL: Default target level
WQC: Water quality criteria

Figure 2-2. MRBCA Process Flowchart (*page 1 of 2*)

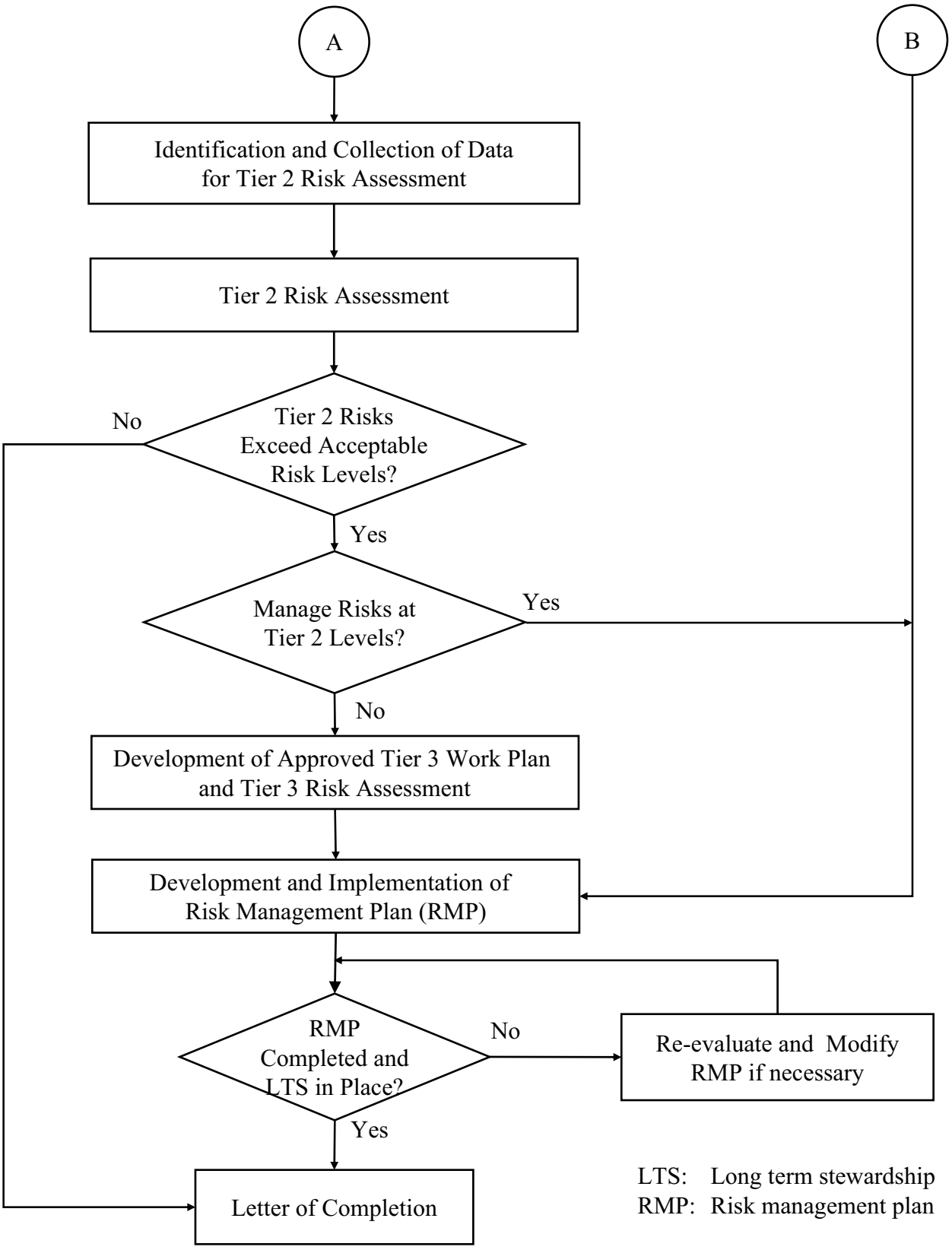


Figure 2-2. MRBCA Process Flowchart (*page 2 of 2*)