

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
CORRECTIVE MEASURES IMPLEMENTATION CHECKLIST**

Facility Name: _____
 Facility Identification Number: _____
 Facility Address: _____
 Application Revision Number: _____

Facility Contact: _____
 Permit Writer(s): _____
 Date Application Received: _____
 Date Review Completed: _____

REQUIREMENT	Work Plan	Report
GENERAL INFORMATION		
• Table of Contents	X	X
• List of tables and figures	X	X
• List of appendices	X	X
• Name of the organization submitting the document	X	X
• Facility name	X	X
• Facility alias	X	X
• Facility address (street, city, county, state,)	X	X
• Facility ID (If EPA ID has been issued)	X	X
• Facility contact person's name, mailing address and phone number	X	X
• Geographic coordinates (latitude/longitude)	X	X
• Environmental Setting (Climate, landscape, surrounding area land use)	X	X
• Type of facility (e.g., plating facility, wood treater, fuel blender)	X	X
• Size of facility (this should include entire contiguous property under the control of the owner/operator)	X	X
• Facility/Site location map and other figures	X	X
• Facility/Site map/sketch including locations of major structures (e.g., buildings, paved areas, fences, property lines, etc.)	X	X
• Ownership (public/private/other)	X	X

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<ul style="list-style-type: none"> ○ Current owner(s), address(es), and dates of ownership ○ Current operator(s), address(es), and dates of operation ○ Former owner(s), address(es), and dates of operation ○ Former operator(s), address(es), and dates of operations 	X	X
<ul style="list-style-type: none"> • Years of operation 	X	X
<ul style="list-style-type: none"> • Facility/Site accessibility (identification of access restrictions, natural barriers) 	X	X
<ul style="list-style-type: none"> • Corrective measures objectives and scope <ul style="list-style-type: none"> ○ Summary of why corrective action is needed/required <ul style="list-style-type: none"> ▪ Including what regulatory authority the remedy is being implemented under (e.g. RCRA permit, cleanup agreement) ○ Summary of the major goals of corrective action <ul style="list-style-type: none"> ▪ Is the cleanup going to achieve unrestricted land use, industrial, etc ○ List major components of the plan <ul style="list-style-type: none"> ▪ For example: dig and haul for source control, pump and treat or bioremediation for groundwater ○ Summarize how the planned action will achieve goals 	X	X
SITE CHARACTERIZATION		
<ul style="list-style-type: none"> • Site description and operational history <ul style="list-style-type: none"> ○ Dates of operation for the site ○ Size of the site ○ Description of historical and current operations conducted at the site 	X	X
<ul style="list-style-type: none"> • Describe the regional and site geology and hydrogeology 	X	X
<ul style="list-style-type: none"> • Groundwater use <ul style="list-style-type: none"> ○ Include a map of all active, inactive, and abandoned wells 	X	X
<ul style="list-style-type: none"> • Summary of previous investigations <ul style="list-style-type: none"> ○ RFI or other remedial investigation (RI, PA, etc) - year conducted, what was done, recommendations and conclusions ○ Groundwater monitoring – describe any ongoing program and results 	X	X

REQUIREMENT	Work Plan	Report
CONTAMINANT FATE AND TRANSPORT		
<ul style="list-style-type: none"> • Identify contaminants of concern 	X	X
<ul style="list-style-type: none"> • Identify the affected media (i.e. soils, groundwater, soils, etc) 	X	X
<ul style="list-style-type: none"> • Identify the extent and distribution of contamination as well as the current concentrations of contamination present 	X	X
<ul style="list-style-type: none"> • Summary of how COCs were determined 	X	
<ul style="list-style-type: none"> • Exposure pathway analysis <ul style="list-style-type: none"> ○ Develop a conceptual exposure model for human and ecological receptors <ul style="list-style-type: none"> ▪ Examine all potential pathways and determine which are potentially complete <ul style="list-style-type: none"> ❖ Soil/direct contact ❖ Groundwater ❖ Surface water/sediment ❖ Air/subsurface gas 	X	
<ul style="list-style-type: none"> • Summary of human health and ecological risk present at the site <ul style="list-style-type: none"> ○ A summary of all major assumptions or parameters should be included 	X	X
CORRECTIVE ACTION		
<ul style="list-style-type: none"> • Design objectives <ul style="list-style-type: none"> ○ Overall description of the proposed remedy design to address COCs in all affected media ○ Describe how remedy will be protective of human health and the environment ○ Summarize remediation goals, including acceptable risk-based target levels ○ Projected time frame for length of remedy operation and plans for determining and reporting the effectiveness of the selected remedy 	X	X
<ul style="list-style-type: none"> • Design criteria <ul style="list-style-type: none"> ○ List and describe each component of the system ○ For each component, discuss the purpose, function, operating procedures, maintenance requirements, and provide design specifications, schematics, and maps as appropriate ○ If extraction is to be used to remediate free phase product, a description of the technique and placement of the extraction point(s) should be included 	X	X

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<ul style="list-style-type: none"> • Regulatory Requirements <ul style="list-style-type: none"> ○ State or local permit requirements and/or institutional requirements ○ Many remediation technologies may be subject to special regulatory and/or permitting requirements, including, but not limited to: <ul style="list-style-type: none"> ▪ National Pollutant Discharge Elimination System (NPDES) permitting ▪ State Indirect Discharge (SID) permitting ▪ Underground Injection Control (UIC) permitting ▪ Source Water Assessment Program ▪ Air Emissions ○ Other environmental or public health requirements that may substantially affect implementation of the remediation system ○ It should be noted, where a remediation will require the use of or alterations to a regulated unit, a permit modification may be necessary. 	X	X
<ul style="list-style-type: none"> • Site Work Plan <ul style="list-style-type: none"> ○ Description of details of plan to construct each element of remedy (for example: for a landfill cap – grading, borrow areas for soil, thickness of the cap, etc.) ○ Who will be responsible for the work ○ Any engineering controls that are part of the plan should also be included ○ Drawings and maps should be provided as appropriate and should include: <ul style="list-style-type: none"> ▪ A North directional arrow ▪ A horizontal scale ▪ Culture relevant to the site (buildings, structures, etc.) ▪ The location of the point source of the contaminant release ▪ All sumps, above ground storage tanks, pipelines, etc. ▪ The horizontal and vertical extent of free-product and/or dissolved phase contaminants in groundwater to above the regulatory levels ▪ The horizontal and vertical extent of the soils and/or sediments that are contaminated at levels in exceedance of the PSVs ▪ The location of the groundwater monitoring well system, which defines the horizontal and vertical extent of contamination ▪ The location of the proposed remediation system 	X	

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<p>extraction/injection wells or points</p> <ul style="list-style-type: none"> ▪ The proposed locations of an adequate number of wells to monitor the effectiveness of the remediation system ▪ A potentiometric surface map contoured to equal mean sea level elevations of the static water level taken during the same measuring event in all groundwater monitoring wells and/or piezometers at the site. The potentiometric surface map should include: <ul style="list-style-type: none"> ❖ A north directional arrow ❖ A horizontal scale ❖ The direction of groundwater flow indicated by arrows pointing downgradient and perpendicular to the contours of equal groundwater elevation ❖ Groundwater elevations for the event in each well ▪ Locations of confirmation samples ▪ Areas where contaminated media will be temporarily stored <ul style="list-style-type: none"> ○ Plan to mitigate potential hazardous discharges into surface water should be included, if appropriate ○ Detailed description of the proposed groundwater remediation system including: <ul style="list-style-type: none"> ▪ Sampling points ▪ Monitoring well locations ▪ Analytical methods ▪ Any other procedures or systems necessary for evaluating the effectiveness of the remediation plan 	X	
<ul style="list-style-type: none"> • Sampling and analysis plan <ul style="list-style-type: none"> ○ Rationale for the selection of sampling locations, parameters, and methodology ○ Description of sample locations ○ Description of sampling procedures ○ Description of decontamination procedures for sampling equipment ○ Description of sample preservation techniques ○ Rationale for each analytical and test method selected for each sampled media ○ Method detection limits ○ Quality assurance/quality control procedures for sampling procedures and analytical methods used 	X	

REQUIREMENT	Work Plan	Report
<ul style="list-style-type: none"> • Waste management plan <ul style="list-style-type: none"> ○ Detailed description of how all treated wastewater and/or soils removed will be handled ○ All remediation wastes generated during site activities should be managed as IDW/RDW and in accordance with ADEM regulations ○ Documentation of any material removed, generated, etc. as part of the remedy implementation should be included in the report 	X	
<ul style="list-style-type: none"> • For the three items above, describe the actual work performed, procedures used, and highlight any deviations from the plan 		X
<ul style="list-style-type: none"> • Contingency plan <ul style="list-style-type: none"> ○ Identify and discuss any known potential problems that could be encountered and how they will be managed ○ What procedures will be followed to ensure the project moves forward if unforeseen problems are encountered and the process has to stop ○ What will happen if the preferred remedy fails to achieve the desired cleanup goals ○ What criteria will be used to decide when an alternative remedy should be implemented 	X	
<ul style="list-style-type: none"> • Performance monitoring plan/remediation plan effectiveness report <ul style="list-style-type: none"> ○ Description of the sampling program that will be used to verify the successful operation of the corrective measure and that the treatment of the contaminated media has resulted in attainment of the proposed cleanup goals ○ Requirements will vary depending on the type of remediation technology utilized but should include at a minimum: <ul style="list-style-type: none"> ▪ Detailed description of all remediation and/or groundwater sampling activities <ul style="list-style-type: none"> ❖ Number, location, and frequency of samples to be collected should be specified and justification given for their selection ❖ List of sampling points, including points of compliance ❖ Types of samples to be taken and analyses to be performed ❖ Sample analytical parameters and methods, including detection limits ❖ Schedule of sampling events ▪ Detailed description including summary tables of all analysis collected and conclusions developed 	X	X

REQUIREMENT	Work Plan	Report
<ul style="list-style-type: none"> ▪ The rate at which contaminant concentrations will decline in the affected media should be specified ▪ Known system performance standards and their anticipated completion dates should be presented ▪ Anticipated degradation products should be identified and monitored ▪ If groundwater is being remediated: <ul style="list-style-type: none"> ❖ A site map showing the location of the groundwater monitoring system ❖ Potentiometric surface maps for all applicable aquifers or separate saturated zones being monitored ❖ Time vs concentration graphs of selected wells and parameters to demonstrate the effectiveness of the groundwater remediation system ❖ Capture zone modeling results indicating the area of influence ▪ Mechanism that will be used to evaluate system performance should be specified ▪ Length of time during which the performance of the system will be evaluated and compliance monitoring will continue ▪ Milestones should be established, identifying when system performance will be evaluated and a decision made as to whether it should continue operating, whether its performance should be altered or enhanced or if it should be replaced by a different remediation system <ul style="list-style-type: none"> ❖ Reporting frequency should also be established (RCRA- minimum of annual corrective action effectiveness report, CERCLA 5-year review) ▪ Conditions necessary to demonstrate remedy completion ▪ Recommendations for upgrade, modification of the system, or any additional remediation activities 	X	X
<ul style="list-style-type: none"> • Corrective measures completion criteria <ul style="list-style-type: none"> ○ If long term monitoring is required, detailed description of what must be achieved for all monitoring and care to cease 	X	X
<ul style="list-style-type: none"> • Land use controls requirements <ul style="list-style-type: none"> ○ For corrective measures where residual concentrations of 	X	X

REQUIREMENT	Work Plan	Report
<p>contaminants remain in place at levels greater than those appropriate for unrestricted land use</p> <ul style="list-style-type: none"> ○ Work plan: detailed description of proposed land use controls to be implemented and draft environmental covenant <ul style="list-style-type: none"> ▪ Clearly describe the objectives to be achieved by the LUCs ▪ Specify the performance standards (e.g. to prevent exposure to contaminated groundwater by prohibiting well drilling) ▪ Include enough information in the discussion to show that the effective implementation of the LUCs can reasonably be expected ▪ Discuss plans for monitoring land use and other aspects of the remedy that depend on LUCs ○ Report: detailed description of land use controls implemented and copy of final covenant signed and filed ○ Activities that will be periodically performed after site work is complete <ul style="list-style-type: none"> ▪ Inspections will be done (e.g. fencing, signage, cap, monitoring well integrity) ▪ Who is responsible for conducting ▪ Required frequency of inspections ▪ Acceptability criteria should be detailed (e.g. all fencing is intact, signs are all present) ▪ What will be done if the acceptability criteria is not met ▪ The frequency that these will be reported (i.e. annual effectiveness report) 	X	X
<ul style="list-style-type: none"> • Quality control/quality assurance procedures 	X	X
<ul style="list-style-type: none"> • Description of deviations from approved CMIP 		X
<ul style="list-style-type: none"> • All monitoring data collected 		X
<ul style="list-style-type: none"> • Certification prepared in accordance with ADEM Administrative Code Rule 335-14-8-02(2)(d) that the corrective measures implementation phase is complete and that the system is ready for operation in accordance with its intended design 		X

REQUIREMENT	Work Plan	Report
IMPLEMENTATION AND SCHEDULE		
<ul style="list-style-type: none"> • Proposed project schedule (day zero should begin on the date of the Final Determination Letter from the Department indicating the acceptance and finalization of the selected remedy) 	X	
<ul style="list-style-type: none"> • Project management <ul style="list-style-type: none"> ○ Key positions and personnel duties and responsibilities listed 	X	
<ul style="list-style-type: none"> • Anticipated Submittals <ul style="list-style-type: none"> ○ Progress reports ○ Construction completion report ○ Performance monitoring reports ○ Corrective measures completion report ○ Public involvement plan ○ Cost estimate/financial assurance 	X	
CONCLUSIONS AND RECOMMENDATIONS		
<ul style="list-style-type: none"> ○ Did the project meet the goals ○ What are the restrictions on land use (e.g. fencing, signage, cap requirements, groundwater usage restrictions, no digging, industrial use, etc.) ○ Discussion of any steps going forward <ul style="list-style-type: none"> ▪ Are further corrective measures anticipated ▪ Is routine maintenance required 	X	X
OVERALL DOCUMENT QA/QC		
In addition to the specific information included in the checklist above, the following information should be evaluated/included in the respective document:		
<ul style="list-style-type: none"> • Is the document complete and internally consistent (e.g. does the document contain conflicting data or conclusions without appropriate explanation or documentation? Are textual discussions supported by the data? Are inconsistencies highlighted and explained?) 	X	X
<ul style="list-style-type: none"> • Does the document include the following information: <ul style="list-style-type: none"> ○ Signature page (signed and dated) ○ References to support information included in the document ○ Appendices ○ Any other necessary log/data sheets related to the remedy 	X	X
<ul style="list-style-type: none"> • Does the document address any other data that may be required but not included in the checklist above? 	X	X

REQUIREMENT	Work Plan	Report
<ul style="list-style-type: none"> • Is the information throughout the narrative adequately referenced? 	X	X
<ul style="list-style-type: none"> • Are statements in the narrative supported by the references cited? 	X	X
<ul style="list-style-type: none"> • Are page numbers provided in reference citations? 	X	X

Notes:

X

Required in Document Review