CONSTRUCTION MANAGEMENT SYSTEM

RISK MANAGEMENT PLAN

August 7, 2008
Version 1.3

California Department of Transportation
Division of Construction
Office of Construction Systems
1120 N Street, Mail Station 44, Sacramento, CA 95814
Approvals

Name: Mark Leja
Title: Project Sponsor

Name: Gene Mallette
Title: Project Director

Name: Christine Inouye
Title: Project Manager
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CMS RISK MANAGEMENT PLAN DOCUMENT REVISION HISTORY

<table>
<thead>
<tr>
<th>Version Number</th>
<th>Date</th>
<th>Description</th>
<th>Author</th>
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<tr>
<td>1.0</td>
<td>7/19/06</td>
<td>First Draft</td>
<td>Larry Wooster</td>
</tr>
<tr>
<td>1.1</td>
<td>12/20/06</td>
<td>Second Draft</td>
<td>Larry Wooster</td>
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<tr>
<td>1.2</td>
<td>05/11/07</td>
<td>Final Draft</td>
<td>Larry Wooster</td>
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<tr>
<td>1.3</td>
<td>07/24/08</td>
<td>Annual Update</td>
<td>Paul Brown</td>
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1.0 Introduction

1.1 Purpose:
The Construction Management System (CMS) Risk Management Plan documents the processes and procedures that are used to manage risks in the CMS project. This plan defines how risks are identified and tracked throughout the project’s life cycle, describes the tools used, identifies the person(s) responsible for managing various areas of risk, and the terms by which contingency plans are derived and implemented.

1.2 Authority
The CMS Risk Management Plan fulfills the requirements of Management Memo 02-20 issued from Department of Finance on September 12, 2002 (see SIMM Section 20, FSR Section 7.0, and SIMM section 30, SPR Section 5.0).

1.3 Risk Description
A risk is an uncertain event that if occurs, has a positive or negative effect on the project objectives. For the purposes of this document, only risks with potential negative impact on the project will be included. When an event that carries a risk to this project has a certainty, it becomes an issue, and is then handled in the CMS Issue Management Process.

1.4. Best Practices
For guidance on the CMS risk management plan methodology the following were utilized

- Department of Finance (DOF) Information Technology Project Oversight Framework – Section 05 http://www.dof.ca.gov/HTML/IT/SIMM/2005/3-05/IT_OvsrghtFrmwrkR2-25-04s.pdf

1.5 Project Risk Spreadsheet
The SEI Taxonomy Based Risk Identification Report (and associated questionnaire) was used for an initial list of suggested risks on this project. CMS Project and IT team members were tasked to evaluate the initial risks based on Caltrans Risk Probability Ranking Tables of the Caltrans Project Risk Management Handbook, First Edition. Using these tables, the responders performed qualitative risk analysis to determine the probability ranking and the impact of the risks on the major project objectives of time, cost, and scope. See Appendices B and C.
### 1.6 Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASHTO</td>
<td>American Association State and Highway Transportation Officials</td>
</tr>
<tr>
<td>BAMS/DSS</td>
<td>Bid Analysis Management System/Decision Support System</td>
</tr>
<tr>
<td>CAS</td>
<td>Contract Administration System</td>
</tr>
<tr>
<td>CCP</td>
<td>Construction Contract Payments</td>
</tr>
<tr>
<td>CICS</td>
<td>Customer Information Control System – an IBM transaction processing monitor</td>
</tr>
<tr>
<td>CMAS</td>
<td>California Multiple Award Schedule</td>
</tr>
<tr>
<td>CMS</td>
<td>Construction Management System</td>
</tr>
<tr>
<td>COTS</td>
<td>Commercial Off-The-Shelf (refers to packaged software)</td>
</tr>
<tr>
<td>CT</td>
<td>Caltrans (State of California, Department of Transportation)</td>
</tr>
<tr>
<td>CUC</td>
<td>Construction Unit Cost System</td>
</tr>
<tr>
<td>DGS</td>
<td>Department of General Services</td>
</tr>
<tr>
<td>DOF</td>
<td>Department of Finance</td>
</tr>
<tr>
<td>FSR</td>
<td>Feasibility Study Report</td>
</tr>
<tr>
<td>IPOC</td>
<td>Independent Project Oversight Consultant</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>IV&amp;V</td>
<td>Independent Verification and Validation</td>
</tr>
<tr>
<td>MSC</td>
<td>Management Steering Council</td>
</tr>
<tr>
<td>PIER</td>
<td>Post Implementation Evaluation Report</td>
</tr>
<tr>
<td>PM</td>
<td>Project Manager</td>
</tr>
<tr>
<td>PMBOK</td>
<td>Project Management Body of Knowledge</td>
</tr>
<tr>
<td>PMSU</td>
<td>Project Management Support Unit</td>
</tr>
<tr>
<td>PRD</td>
<td>Project Risk Database</td>
</tr>
<tr>
<td>RACF</td>
<td>Resource Access Control Facility</td>
</tr>
<tr>
<td>SEI</td>
<td>Software Engineering Institute</td>
</tr>
<tr>
<td>SME</td>
<td>Subject Matter Expert</td>
</tr>
<tr>
<td>SPR</td>
<td>Special Project Report</td>
</tr>
<tr>
<td>VSAM</td>
<td>Virtual Storage Access Method – file management system on IBM mainframes</td>
</tr>
<tr>
<td>WBS</td>
<td>Work Breakdown Structure</td>
</tr>
<tr>
<td>WCCP</td>
<td>Construction Contract Payments - A report from Accounting's data posted on the Internet displaying contractor payment information.</td>
</tr>
</tbody>
</table>
## 2.0 ROLES AND RESPONSIBILITIES

The following table discusses the roles and responsibilities of the various personnel involved in the management of the CMS project:

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| CMS Project Management Team (includes Independent Verification & Validation Consultant) | • Attend Risk Meetings as required  
• Identify and assist to classify new risks  
• Assist in determining probability, impact, and time frame  
• Recommend approach and actions  
• Prioritize identified risks  
• Consult with Subject Matter Experts when necessary |
| Risk Owner (Normally the CMS WBS Task Manager)                       | • Attend Risk Meetings as required  
• Map each high and medium risk to their WBS element(s) that will need to include response activities for that risk  
• Determine the probability, impact, and exposure rating of their identified risks  
• Ensure accuracy of probability/impact/timeframe estimates  
• Decide on the best response to each high risk: avoid, transfer, mitigate or accept.  
• Include specific activities to address the identified risks as part of his or her plan for producing the WBS element.  
• Report the results of that analysis back to the Risk Manager using the CMS Risk Identification and Response Plan Form (Appendix A).  
• Responsible for implementing individual risk response plans  
• Report progress to Risk Manager on an agreed upon timeframe.  
• Consult with Subject Matter Experts when necessary |
| Project Manager                                                      | • Participate in the Risk Management process  
• Make control decisions (analyze, decide, execute) for top project risks  
• Assign and change responsibility for risks and mitigation plans within the project  
• Authorize expenditures of resources for mitigation/contingency planning execution  
• Coordinate communication with task managers and external customers  
• Review general risk measures/metrics with DOF/Oversight & consultants  
• Escalate as required and outlined in this plan  
• Ultimately responsible for the final decisions on risk actions |
| Risk Manager                                                        | • Responsible for leading the risk management effort  
• Sponsor risk identification activities  
• Facilitate the communication throughout the risk process  
• Report on risk management at biweekly meetings  
• Ensure the risk spreadsheet is maintained  
• Provide the Project Manager with recommendations and status of risks  
• Consult with Subject Matter Experts when necessary |
| Subject Matter Experts                                              | • Participate in Risk Meetings and reviews as required  
• Provide expertise to project as necessary  
• Assist in determining probability, impact, and time frame  
• Advise on accuracy and completeness of information in his or her area of expertise |
| Independent Project Oversight Consultant                           | • Participate in Risk Meetings and reviews as required  
• Perform their own risk identifications  
• Provide Oversight of the project and report to external stakeholders  
• Submit a status report to DOF Technology Oversight as required |
| Project Director and Project Sponsor                               | • Receive escalated risks and assist with mitigation and contingency actions as needed  
• Participates in risk identification and the risk management process as needed |
| Steering Committee                                                  | • Review and adopt or reject risk response strategy as recommended by the Project Manager |
### Role Responsibilities

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| Prime Contractor   | • Responsible for identifying risks to the Project Manager and managing risks internal to their activities  
                      • Assisting with mitigation and contingency activities for project risks.  
                      • Prime is required to report their risks in their monthly status reports and raise potential project risks to the project team at appropriate status meetings. |

### 3.0 RISK MANAGEMENT PROCESS

The risk management process for this project is adapted from the Project Management Institute PMBOK® (Project Management Body of Knowledge) 2000 edition, with updates from the Third Edition.

- Step 1 – Risk Identification
- Step 2 – Risk Analysis
- Step 3 – Risk Response Planning
- Step 4 – Risk Monitoring and Controlling

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**Figure 1**

CMS Project’s Risk Management Process Overview - Section 3
4.0 Risk Identification

Risk Identification is the process of determining those risks that might affect the project and its outcome. When a risk and its characteristics are identified and documented, then a response to the risk can be planned, and it can be monitored.

Risk identification is an iterative, on-going task throughout the project lifecycle. It consists of a formal and an informal approach.

4.1 Formal Risk Identification
The Risk Manager is responsible for conducting formal risk identification activities. The Risk Manager stays apprised of the progress of the project, and communicates with project team members to specifically identify risk. The Project Status Meetings is the primary forum for the formal discussion of risk. The Risk Manager conducts Risk Management team meetings as necessary to formally identify and track project risk.

4.2 Informal Risk Identification
Informal risk identification occurs as a result of normal project business. Any person associated with the project including prime contractor staff, sponsor representatives, stakeholders, users, IPOC, and the IV&V is expected to identify and document a candidate risk as per Section 4.3.

4.3 Initiating and Documenting of the Candidate Risk
The “Risk Identification and Response Plan” form in Appendix A is used to document risk in the CMS project. The identification of a risk is initiated by documenting what is known about the specific risk in the top three rows of the form. The description of the risk clearly indicates the concern, likelihood (if known), and the possible consequences. The description may also include assumptions, constraints and relationship to other project risks, issues or activities, and potential impacts to the project budget, schedule, quality, or stakeholders.

The initiator submits the form to the Risk Manager. The Risk Manager and the initiator ensure that the initiating information is complete. The Risk Manager assigns a unique identifier, and inputs the information into the risk spreadsheet labeled “Site Manager Risk Analysis” located on the server.

4.4 Validating the Candidate Risk
The Risk Manager is responsible for coordinating the review and validation of the candidate risks. The Risk Manager relies on expert judgment in the project management team to assess the candidate risk and determine if any concern or action is warranted. This may include a risk review meeting with a Subject Matter Expert (SME- i.e. contractor, district, IT, or whomever may best be suited to help identify the risk and all its associated aspects) if more expertise is needed for proper assessment (See Section 4.6).

If a candidate risk is determined to be invalid, the risk is retired. If a candidate risk is determined to be valid, the risk is assigned to a Risk Owner.
4.5 Assignment of the Risk to a Risk Owner

When a risk is deemed valid, the Project Manager will assign the risk to a Risk Owner. The Risk Owner is a CMS Project Management Team Member assigned to monitor, track and prepare a response for an identified risk.

The Risk Manager will supply the previously initiated CMS Risk Identification & Response Plan form (see Section 4.4) to the Risk Owner for completion according to Sections 5, 6, and 7 of this plan. The Risk Manager and the Risk Owner will ensure that the information on the form is complete and accurate.

4.6 Subject Matter Expert (SME) in Risk Identification

When necessary, the Risk Owner and/or the Risk Manager will enlist SME(s) to assist in risk identification.

**Step I CMS Project’s Risk Identification - Section 4**

![Flowchart](image)

Figure 2

5.0 Risk Analysis

Analysis of the risk is necessary so that a proper response to the risk can be planned and implemented. The risk description and primary risk areas as identified by the initiator on the Risk ID form indicate to the Risk Owner the WBS elements in which the project team can take steps to respond to the risk. The Risk Owner can enlist other team members or SME to assist in identifying those WBS elements in which avoidance, mitigation, or transfer of the risk can take place. Additionally, the characteristics of the risk will also help place it in the time frame of the project lifecycle.
Using the tools provided in the Risk Probability Ranking Tables (see Appendix B), identified risks are assigned a prioritized ranking based on the probability and impact as outlined in this section. The results are recorded on the CMS Risk Identification & Response Plan form in the appropriate boxes by the Risk Owner, and entered and updated in the project risk spreadsheet by the Risk Manager.

5.1 Risk Probability Ranking
A current estimate will be performed based on professional judgment and past experience for the probability (in percent) that the risk will occur over the impact time frame given. This value can change over time as the risk is actively managed.

5 \ (\approx 90\% \text{ chance of occurrence})
- Occurrence is very likely and may not be controlled by following existing processes, procedures, and plans.

4 \ (\approx 70\% \text{ chance of occurrence})
- Occurrence is most likely and may not be entirely controlled by following existing processes, procedures, and plans.

3 \ (\approx 50\% \text{ chance of occurrence})
- Occurrence is likely and may not be entirely controlled by following existing processes, procedures, and plans.

2 \ (\approx 30\% \text{ chance of occurrence})
- Occurrence is unlikely and may be entirely controlled by following existing processes, procedures, and plans.

1 \ (\approx 10\% \text{ chance of occurrence})
- Occurrence is very unlikely and is generally controlled by following existing processes, procedures, and plans.

5.2 Impact Analysis
Risk will be analyzed for the impact on the project if it materializes. The values 1 to 16 represent a subjective ranking of the impact. Guidelines for the impacts on the three major objectives of time, cost, and scope are listed below.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Schedule</th>
<th>Cost</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>Insignificant Schedule Slippage</td>
<td>Insignificant cost increase</td>
<td>Scope decrease is barely noticeable</td>
</tr>
<tr>
<td>Very Low</td>
<td>Schedule Slippage &lt; 5%</td>
<td>&lt;5% cost increase</td>
<td>Minor Areas of Scope Are Affected</td>
</tr>
<tr>
<td>Low</td>
<td>Overall Project Slippage 5-10%</td>
<td>5–10% cost increase</td>
<td>Major Areas of Scope Are Affected</td>
</tr>
<tr>
<td>Moderate</td>
<td>Overall Project Slippage 10-20%</td>
<td>10–20% cost increase</td>
<td>Scope Reduction Unacceptable to the Customer</td>
</tr>
<tr>
<td>High</td>
<td>Overall Project Slippage &gt;20%</td>
<td>&gt;20% cost increase</td>
<td>Scope does not meet purpose and need</td>
</tr>
<tr>
<td>Very High</td>
<td>Overall Project Schedule Slips &gt;20%</td>
<td>Overall Project Slippage &gt;20%</td>
<td>Overall Project Slippage &gt;20%</td>
</tr>
</tbody>
</table>
5.3 Impact Time Frame
The earliest and latest WBS elements that the risk could impact will be recorded on the Risk Identification and Response Plan form to determine the risk impact time frame. These identified WBS elements will be used to define the period of time the risk is managed.

5.4 Review Risk Analysis and Ranking
The Risk Manager presents the risk analysis for discussion at the project management team meetings on a biweekly basis. At this time the impacts and possible mitigation/contingency options are discussed, and the risk’s exposure is assessed. The project team then reviews the risk for its relative rank among existing risks and reviews the risk in combination with other risks (for example, with other risks in a similar functional area or risks with similar impacts). The team may recommend to the Risk Owner or Project Manager to adjust the response plans or other project priorities to ensure the risk is adequately addressed.

5.5 Update Risk Spreadsheet with Team / Management Comments
After the team and/or management review, the Risk Manager updates the risk spreadsheet with any comments, and documents the next steps for the risk (if any). If the management team changed the ranking of the risks, the Risk Manager updates the risk spreadsheet to reflect current priorities and concerns.

5.6 Subject Matter Expert (SME) in Risk Analysis
When necessary, the Risk Owner and/or the Risk Manager will enlist SME(s) to assist in risk analysis.
6.0 Risk Response Planning

Those risks with an exposure rating of 12, or in a condition of great change, will have a Risk Response Plan prepared to reduce the threat to project objectives.

6.1 Risk Response Plan

The following information is verified and documented in the CMS Risk Identification & Response Plan form (See Appendix A) by the Risk Owner and then entered into the project risk spreadsheet by the Risk Manager.

- Verify the Risk Description as described by the Initiator of the risk; clarify if necessary
- Verify the primary risk area (cost/scope/schedule) as described by the Initiator; clarify if necessary
- The WBS element(s) in which the Department will respond to the risk
- A probability, impact, and exposure rating. (See Section 5)
- The Risk Response Type (See Section 6.2)
- Impact time frame in which the risk may occur. (See section 5.4)
- Risk Response description to describe the approach or other background efforts
- Contingency Plan Trigger under which the contingency plan will be implemented
- Contingency plan, if a contingency plan is part of the response, the actions that will be taken and by whom
- The current status of the risk
- The impact on the Critical Path
• Whether the control of the risk is internal, external, or internal/external to the project

6.2 Tools & Techniques for Risk Response
The standard risk response strategies will be used on this project:

• **Avoidance** – Reducing scope, changing the project plan, adding resources or time, adopting a familiar approach instead of an innovative one, or avoiding an unfamiliar subcontractor may be example of avoidance that this project will use.

• **Transference** - Shifting the consequence of a risk to a third party with the responsibility for its management via contracts, performance bonds, warranty.

• **Mitigation** – Involves taking early action to reduce the probability and/or consequences of a risk event to an acceptable level of impact to cost, scope or schedule.

• **Acceptance** - This technique indicates that the project team has decided not to change the project plan to deal with a risk or is unable to identify any other suitable response strategy. Acceptance requires no action leaving the project team to deal with the risk as it occurs.

6.3 Risk Response Description
If the response is not to accept the risk, then the conditions that will reduce or eliminate the effects of the risk are developed by the Risk Owner and documented on the CMS Risk Identification and Response Plan form in the Risk Response Description field. This response may be preventative, or may lessen the probability or impact of the risk should it occur. The Risk Owner may require the assistance of the team, or of SME to develop an appropriate Risk Response Description.

6.4 Contingency Thresholds/Triggers
A contingency threshold or trigger is an indication that a change in the risk exposure has occurred (a change in the probability and/or the impact) and that the risk event has a greater potential to adversely affect the project. The trigger should be specific and defined well enough to be tracked and to remove the uncertainty that the risk event is occurring or is imminent. The Risk Owner documents the defining criteria of the trigger on the CMS Risk Identification and Response Plan. When this defined criteria is reached, a contingency plan is implemented to respond to the risk.

6.5 Contingency Plan
A contingency plan will be applied to risks that are imminent or are occurring. The contingency plan describes what actions are to be taken by whom and in what order to effectively respond to the negative circumstances or events. The contingency plan also gives the initial recommended actions to be taken in the CMS Issue Management process when a risk event occurs and the risk becomes an issue.

6.6 Review Risk Response Plan
The Risk Owner and the Risk Manager will review the risk response plans at their discretion and significant developments will be discussed at the biweekly status meetings. A risk team will periodically review the plans, trigger events, and measurements for tracking effectiveness to ensure they are feasible and appropriate for the severity and ranking of the risk. The team may propose additional actions or changes to the response plans before their implementation.

6.7 Update Risk Spreadsheet with Risk Response Status
The Risk Owner provides status updates to the Risk Manager who updates the risk spreadsheet to reflect the actions being taken and document completion of risk response plan tasks. In some cases, the actions also may be tracked in the project work plan to ensure appropriate visibility. Response plan activities and their effectiveness are reported in the biweekly status meetings.
6.8 Subject Matter Expert (SME) in Risk Response

When necessary, the Risk Owner and/or the Risk Manager will enlist SME(s) to assist in risk response.

7.0 Risk Monitoring and Control

Risk tracking and control follows the progress of the risk and its probability, as well as the status of any mitigation/contingency strategies that have been executed. When changes to the risk profile occur, as in residual risks or secondary risks, the risk management process is repeated. The Revision History of a risk is documented and updated in the proper field of the CMS Risk Identification and Response Plan form including the date of the entry and a description of any changes affecting the risk.

7.1 Monitor Changes to Risk Profiles and Response Plans

The Risk Owner monitors the assigned risk, notifies the Risk Manager whenever there is a significant change to the risk’s profile, and makes recommendations to address the changes in the response plans. Recommendations to improve the effectiveness of the plans are discussed, as are whether the measures are providing the necessary information to track the risk’s progress.

The deficiencies and proposed changes are discussed with the management team and changes are approved or sent back for further analysis/development, as needed. Changes to risk profiles also are discussed, both individually and across all risks. Risk ranking and project priorities may be changed as a result. If a risk’s profile changes such that its probability and/or impact drops below the project risk tolerances, the risk may be a candidate for retirement or closure.
7.2 Report Risk Status
Risks when first identified have a status of ‘Open’. Once a response plan is developed, the risk status changes to ‘Executing Response’ or ‘Future Response’ if the WBS response element has not yet occurred. Upon implementation of the proactive portion of the risk response plan, or if the risk strategy is ‘Acceptance’, the risk status changes to ‘Monitor’. If project developments or the effectiveness of the response plan leads to the modification of the risk response plan, the risk status reverts back to ‘Executing Response’ or ‘Future Response’ until implementation of the updated risk response plan.

The Risk Owner is required to report significant developments to the project team at the biweekly project team meetings. The Risk Manager reviews the status of risk activities periodically (at least monthly) with the Project Manager and the project management team and discusses the effectiveness of the current response plans. The Risk Manager updates the risk spreadsheet to reflect the current risk state. At the discretion of the Risk Manager, or by the request of the Project Manager, Risk Management team meetings may be called in the interim between status meetings.

7.3 Monitor Trigger Events
The Risk Owner has the primary responsibility for monitoring the trigger events associated with mitigation/contingency actions. The Risk Manager assists with tracking triggers and includes any significant development in the regular risk status review in the biweekly status meetings.

7.4 Execute Contingency Plan(s)
When a trigger event occurs or is imminent, the Risk Owner:

- Implements the contingency portion of the response plan and notifies the Risk/Project Manager of the plan execution.
- Notifies all parties identified in the response plan and ensures all activities are coordinated.
- Takes the specific measurements to determine the effectiveness of the activities.
- If the activities are not producing the desired effect he/she notifies the Risk Manager immediately and proposes changes to address the deficiencies.
- The Risk Manager will work with the Risk Owner to enhance or change the response plan including taking the matter to the project team and SME(s).
- If the risk event occurs, the risk becomes an issue and an Issue Form will sent to the CMS Issue Coordinator by a team member at the request of the Risk Manager, or by the Risk Manager.

7.5 Retire Risk(s)
Risks are closed when the risk event actually occurs or when the likelihood of the risk is reduced such that it is not worth expending resources to track it. Response Plans are halted and closed. If the risk could possibly arise again, the risk may be reduced to a ‘Dormant’ status and evaluated as agreed upon by the Risk/Project Manager and the Risk Owner. Any stakeholder may recommend a risk for retirement.

The Project Manager makes the final decision to retire a risk. If there is any disagreement, the Project Steering Committee and/or Sponsor should be involved in the decision to retire a risk.
8.0 Risk Communications
Communications regarding risks are continuous throughout the project’s life cycle both through verbal and written reports.

<table>
<thead>
<tr>
<th>Meeting Type</th>
<th>Frequency</th>
<th>Target Audience</th>
<th>Inputs</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Status</td>
<td>Biweekly</td>
<td>Functional Team Leaders</td>
<td>Risks associated with the WBS elements that will be worked on in the upcoming month.</td>
<td>New risk identification. Specific activities to address the identified risks as part of the plan for producing each WBS element.</td>
</tr>
<tr>
<td></td>
<td>As Needed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steering Committee</td>
<td>Monthly</td>
<td>Steering Committee</td>
<td>Adopt or reject response strategies for risks.</td>
<td>Closure authorization.</td>
</tr>
<tr>
<td>Control Agencies (IPOC)</td>
<td>As needed or required</td>
<td>DOF</td>
<td>External dependency mitigation recommendations.</td>
<td>Monthly Independent Project Oversight Report.</td>
</tr>
</tbody>
</table>
8.1 Periodic Status Meetings
On a periodic basis, the Risk Manager solicits updates from the risk owners and updates the risk spreadsheet. Risk management activities and the current log of active risks are discussed at project team status meetings. This includes formal and informal identification and status of individual risk activities and assignments. Current risk status and the results and effectiveness of mitigation/contingency actions are reviewed, along with the status of risk trigger events and risk profiles.

8.2 Revision History
Any action taken on a specific risk will be logged in the Revision History field on the CMS Risk Identification and Response Plan form, and will be logged in the risk spreadsheet by the Risk Manager. This will serve as the repository of the life cycle documentation of the risk activities. This will also serve for justifying specific actions that were taken along with completing the lessons learned. The pertinent dates event or decision made, the person(s) most knowledgeable about the event and a short description of the event will be captured.

8.3 Report Lessons Learned on Risks
The Risk Manager documents the result of risk actions (whether successful or unsuccessful) and lessons learned in the risk spreadsheet. At the end of the phase, the Risk Manager discusses the results of the lessons learned sessions with the PM and with others as appropriate. The Risk Manager leads a final risk review to document the final status and results of mitigation and/or contingency actions to identify lessons learned during the project.

8.4 Communication with CMS Issue Management
Any person associated with the project may initiate the Issue Management process. When a risk has 100% probability and becomes an issue, the Risk Manager is responsible for initiating the CMS Issue Management process by ensuring that an Issue Form is completed and submitted to the CMS Issue Coordinator.

9.0 Risk Management and the Prime Contractor

9.1 Oversight of Prime Contractor’s Risks
The prime contractor is required to produce a risk management plan, to populate and use a project risk register, and to actively monitor and respond to risks.

Risk management on the CMS project is a team effort. Cooperation between the CMS project team and the contractor is expected. If risk identified by the contractor is significant, the project may open a corresponding risk within the project’s risk spreadsheet and initiate its own mitigation/contingency actions to complement or supplement the contractor’s risk response plans.

9.2 Prime Contractor Participation in Risk Management
The prime contractor (and any subcontractors) is encouraged to participate in risk identification for the overall project effort. Any concerns or questions regarding the project’s risk management efforts are directed to the Risk Manager.

Prime contractor staff may be assigned as a risk owner and may assist with mitigation and contingency actions, as appropriate.
## Appendix A

### CMS Risk Identification & Response Plan Template

**Initiator completes only the first three rows. Initiator’s submittal may be altered by the Risk Owner**

<table>
<thead>
<tr>
<th>Risk ID # and Title:</th>
<th>Initiator:</th>
<th>Date Submitted:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Risk Description:**

<Initiator documents the risk in the format of "As a result of (If), <cause>, <uncertain event> may occur, which will (may) lead to <effect>.”>

**Primary Risk Area (Schedule, Cost or Scope):**

<Initiator or Risk Owner documents the area(s) that would be primarily affected and why>

**Initiator does not complete below this line. Risk Owner completes the remainder of this form.**

<table>
<thead>
<tr>
<th>Risk Owner:</th>
<th>WBS element(s) in which the Department will respond to risk:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Risk Probability Ranking:**

<See CMS RMP Section 5.1, 1-5 scale, 1 is very low & 5 is very high>

**Impact:**

<1-16 scale, 1 is very low & 16 is very high>

**Risk Exposure Rating:**

<Multiply “Risk Probability Ranking” by “Impact”, Possible range 1 (1 x 1) to 80 (5 x 16)>

**Risk Response Type:**

<Select one or more of the following four.>

- Accept
- Avoid
- Mitigate
- Transfer

**Risk Response Description:**

<If the response type is not “Accept”, explain what will be done to avoid, mitigate or transfer the risk>

**Contingency Plan Trigger:**

<State what event would cause the contingency plan to be implemented as the risk becomes an issue>

**Contingency Plan:**

<Describe each action that needs to be taken and by whom>

### # | Action | Responsible Party |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Current Status:**

<List risk responses being implemented>

**Critical Path Impacted:**

<Yor N>

**Control:**

<Internal or external to team.>

**Revision History:**

<Document updates and changes in conditions affecting this risk>

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B

Risk Probability Ranking

Using established methods and tools, qualitative risk analysis assesses the probability and the consequences of each identified risk to determine its overall importance. Using these tools helps to correct biases that are often presented in a project plan. In particular, careful and objective definitions of different levels of probability and impact are the keys to the credibility of the results.

To rank risks by probability and impact:

Step 1: Set up a matrix to match a percentage (probability of risk) to a ranking number. Department project managers often use the matrix shown below, but they can set up a different matrix if it would better suit the project.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Probability of Risk Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>80–99%</td>
</tr>
<tr>
<td>4</td>
<td>60–79%</td>
</tr>
<tr>
<td>3</td>
<td>40–59%</td>
</tr>
<tr>
<td>2</td>
<td>20–39%</td>
</tr>
<tr>
<td>1</td>
<td>1–19%</td>
</tr>
</tbody>
</table>

Step 2: Set up a matrix to match the objective (time, cost, and scope) to a defined impact. Department project managers often use the impact numbers shown in the matrix below, but they can choose others if it would better suit the project.

<table>
<thead>
<tr>
<th>Impact</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Schedule</td>
<td>Insignificant schedule slippage</td>
<td>Delivery plan milestone delay within quarter</td>
<td>Delivery plan milestone delay of one quarter</td>
<td>Delivery plan milestone delay of more than one quarter</td>
</tr>
<tr>
<td></td>
<td>Cost</td>
<td>Insignificant cost increase</td>
<td>&lt;5% cost increase</td>
<td>5–10% cost increase</td>
<td>10–20% cost increase</td>
</tr>
<tr>
<td></td>
<td>Scope</td>
<td>Scope decrease is barely noticeable</td>
<td>Changes in project limits or features with &lt;5% cost increase</td>
<td>Changes in project limits or features with 5–10% cost increase</td>
<td>Sponsor does not agree that scope meets the purpose and need</td>
</tr>
</tbody>
</table>

Step 3: Combine the data from the two previous steps. Each risk appears in its own probability and impact (PxI) matrix.
The PDT uses a PxI matrix to combine each risk’s probability and impact. These matrices establish whether each risk is high, moderate, or low. The risks can then be displayed by high, moderate, and low groupings for each of the three objectives (time, cost, and scope). Department project managers often use the PxI matrix shown below, but they can set up a different matrix and assign different scores if it would better suit the project.

### Time, Cost, and Scope Objectives
Large Aversion to High & Very High Impacts

<table>
<thead>
<tr>
<th>Probability</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 1. Sample PxI matrix

Some Department project managers use a PxI matrix based on narrative probabilities and impacts (very low, low, moderate, high, very high) rather than numerical ones:

![PxI matrix based on narrative probabilities and impacts](image)