

EBC Ascending Professionals Webinar: Introduction to the Massachusetts Contingency Plan



Welcome

Jackson Bailey

*Marketing & Program Manager
Environmental Business Council*



Environmental Business Council of New England
Energy Environment Economy

Introduction to the Massachusetts Contingency Plan

Jessica Yeager

Program Chair

Senior Engineer

Geosyntec Consultants



Environmental Business Council of New England
Energy Environment Economy

Introduction to the Massachusetts Contingency Plan

By
Jessica Yeager, PE(MA), LSP
April 1, 2020

Background – The MCP Approach

1

MCP Flowchart and Timeline

2

Notification

3

Preliminary Response Actions

4

Tier Classification

5

Comprehensive Response Actions

6

Risk Characterization

7

Permanent and Temporary Solutions

8

Audits

9

Background – The MCP Approach

Massachusetts General Law Chapter 21E tasks MassDEP with ensuring the permanent cleanup of contamination.

MassDEP implements this law through a set of regulations known as the Massachusetts Contingency Plan (310 CMR 40.0000).

Regulation found at <https://www.mass.gov/regulations/310-CMR-4000-massachusetts-contingency-plan>

Who is Responsible for Cleanup?

- Property owners and other potentially responsible parties (PRPs) are responsible for cleanup when contamination is found.
- Responsibilities:
 - Notifying MassDEP of contamination
 - Ensuring that contamination is assessed and cleaned up
- PRPs:
 - Current and past property owners
 - Generators and transporters
 - Others who may have caused or contributed to contamination
- Law includes an “end to liability” for eligible PRPs once cleanup is complete:
 - That is when a Permanent Solution or Remedy Operation Status is achieved

Who Performs Cleanup?

Licensed Site Professionals (LSPs) oversee cleanup at most sites.

- LSPs are licensed by a State board.
- LSPs are hired by PRPs to
 - oversee assessment and cleanup of contamination, and
 - ensure compliance with the MCP.
- LSP opinions usually do not require MassDEP approval.



MassDEP oversees cleanup in certain cases:

- Emergency response
- Key stages of assessment and cleanup at specific sites
- MassDEP ensures compliance through audit activities

How Clean is Clean Enough?

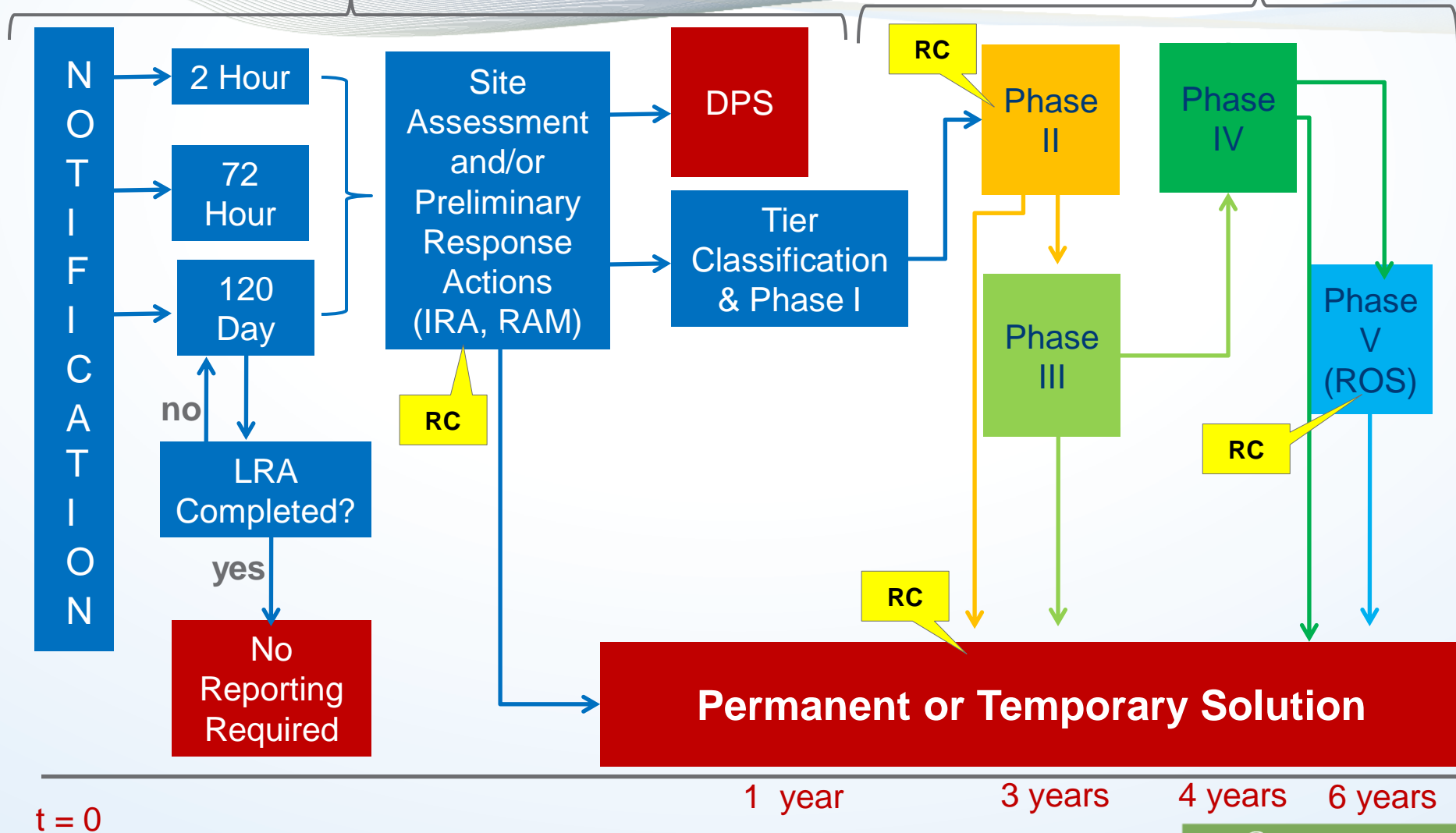
When a condition of **No Significant Risk** of harm to health, safety, public welfare, and the environment is achieved.

If feasible, when **Background** conditions have been achieved.

Background = conditions that would have existed in the absence of a release

1 year

5 years



$t = 0$

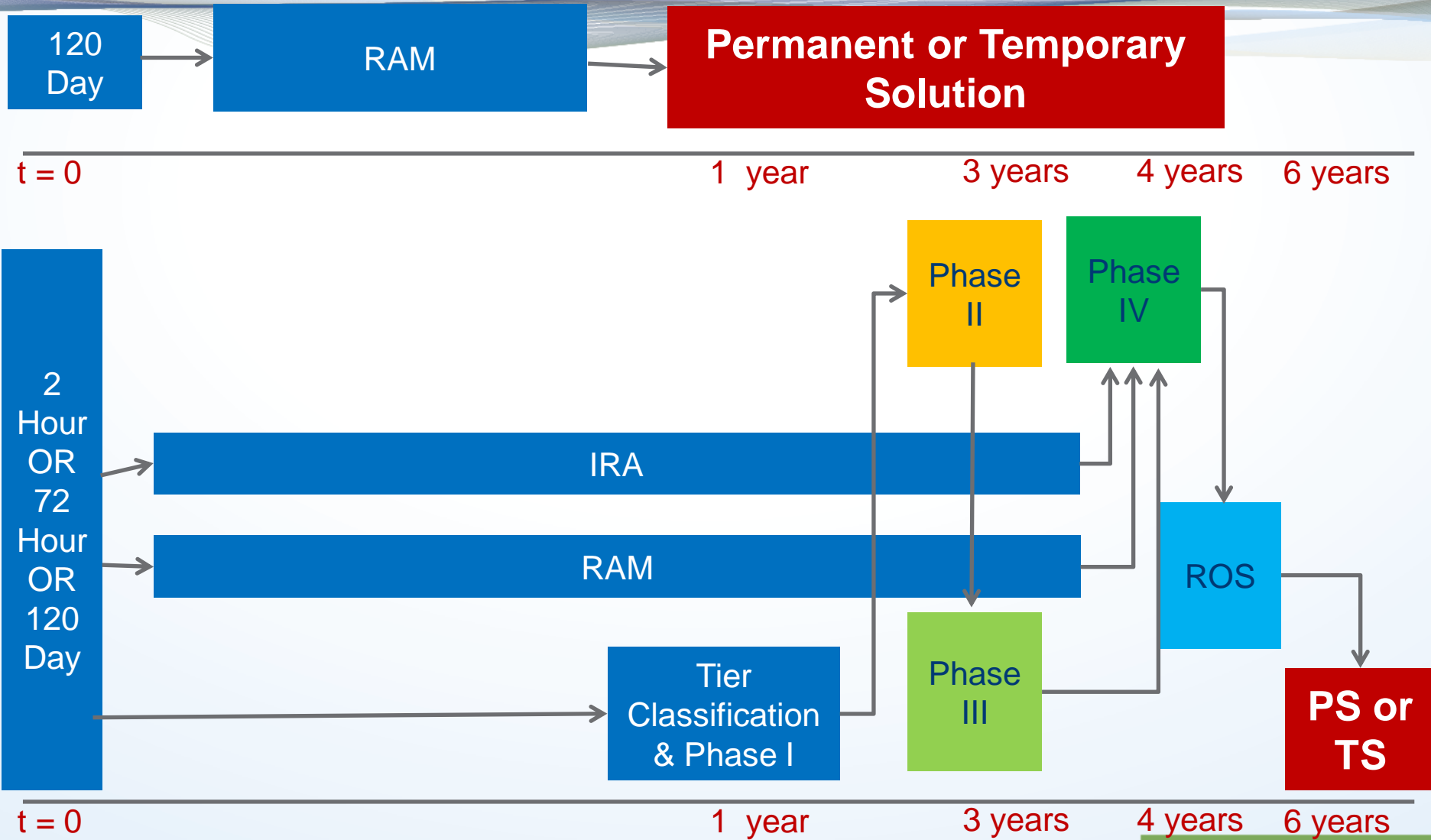
1 year

3 years

4 years

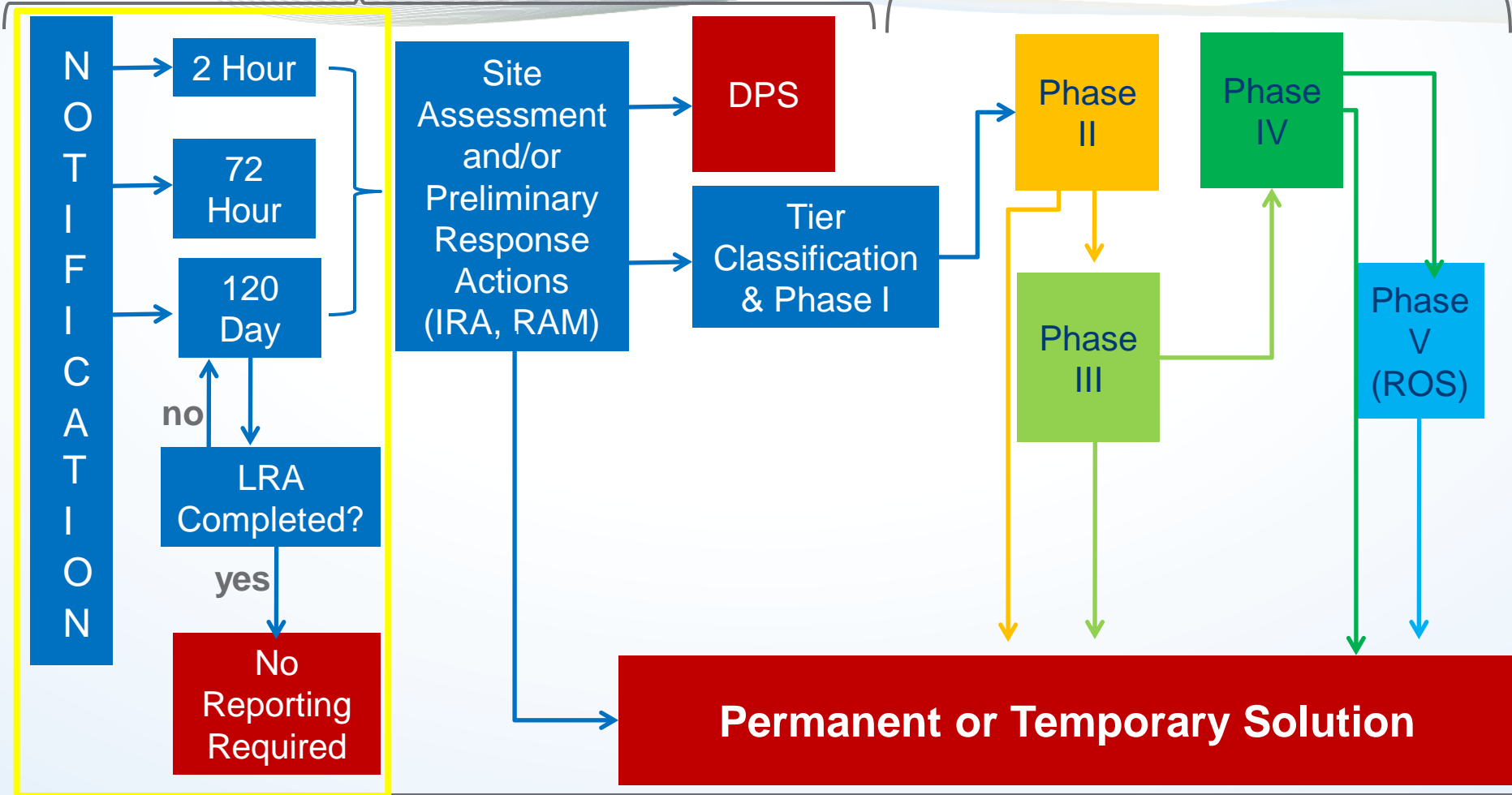
6 years

Multiple Paths through the MCP



1 year

5 years



$t = 0$

1 year

3 years

4 years

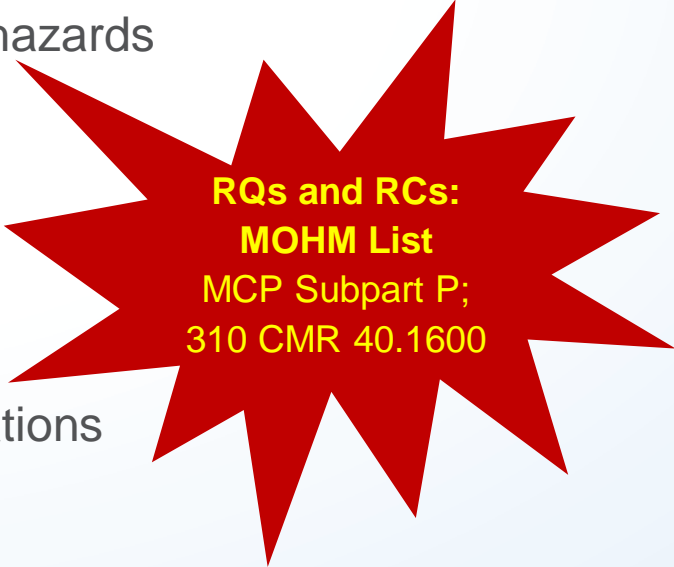
6 years

MCP Subpart C - 310 CMR 40.0300s

- MassDEP does not need to know about small releases that are being cleaned up.
- MassDEP must be notified about and will track significant releases.
- There are triggers and thresholds above which releases enter MassDEP's release tracking system via *Notification*.
- PRP, not LSP, is responsible for notification, though LSP can notify on behalf of PRP.

Required Release Notifications

- **2-Hour Notification Requirements**
 - Release or threat of release
 - Reportable quantity (RQ) based
 - Emphasis on sudden release and imminent hazards
- **72-Hour Notification Requirements**
 - Release or threat of release
 - Subsurface NAPL (>½ inch)
 - Tank closure
 - Drinking water and vapor intrusion considerations
- **120-Day Notification Requirements**
 - Reportable concentration (RC) based
 - Thinner NAPL layers (> 1/8 inch)



**RQs and RCs:
MOHM List
MCP Subpart P;
310 CMR 40.1600**

Notification within 2 Hours

Sudden release above RQ or when quantity is unknown

1

Sheen on surface water

2

Concentrations above RCGW-1 in private drinking water well

3

Sudden releases via storm drains or sanitary sewers

4

Imminent hazards – pose or could pose

5

Significant risk to human health when present for short period of time



1

Vapors in buildings, structures, or underground utility conduits \geq 10% of lower explosive limit

2

Threat to human health or safety (roadways)

3

Readily apparent effects on human health

4

Immediate or acute impacts to fish populations

5

Releases that *Could* Pose an Imminent Hazard

Long-term risk to human health greater than 10 x MCP risk limits

Concentrations ≥ 10 x RCGW-1 in private drinking water supply well

Following concentrations (mg/kg) in exposed, shallow soil within 500 ft of residence, school, recreation area, etc.

arsenic	cadmium	chromium (VI or tot)	cyanide	mercury	methyl mercury	PCBs
40 (50)	60 (1,000)	200	100	300 (400)	10	10 (20)

NAPL greater than 0.5 inches

1

More than 100 ppm headspace screening during closure of underground storage tank (UST).

2

Concentrations above RCGW-1 within Zone 1 of public water supply or 500 feet of private water supply

3

Substantial release migration

4

Threat – failed UST leak test

5

Substantial Release Migration (SRM)

- Discharge of separate phase OHM to surface water, subsurface structures, underground utilities or conduits
- Ground surface or vadose zone releases that have the potential to impact groundwater significantly
- Groundwater releases that
 - May migrate more than 200 ft/year
 - Are likely to be detected within 1 year at:
 - Public or private drinking water supply well
 - Surface water body or wetland
 - Public water supply reservoir
 - Are likely to result in vapor intrusion to a school or occupied residence



- OHM in soil or groundwater > RC
 - Soil Reporting Categories
 - RCS-1
 - Within 500 ft of residence, school, playground, etc.
 - In an area where groundwater categorized as RCGW-1
 - RCS-2 – all other soil
 - Groundwater Reporting Categories
 - RCGW-1 – within Current or Potential Drinking Water Source Area
 - RCGW-2 – all other groundwater
- NAPL greater than 1/8 inch but less than 1/2 inch

Normal Operations:

Oil water separator, parking lot runoffs, motorboats

Regulated by Others:

Permitted emissions, radionuclides, explosives, methane propane, LNG

Consistent with Labeling:

Pesticide application, lead paint

Consistent with Intended Use:

Piers, pilings, utility poles, landscape timbers

Related to Coal, Coal Ash, or Wood Ash

As, Be, or Ni in Boston Blue Clay

Errors in Sampling, Analytical, or Observational

1

Tank Testing Error:
Must be based on preponderance of the evidence.

2

Successful Completion of Limited Removal Action

3

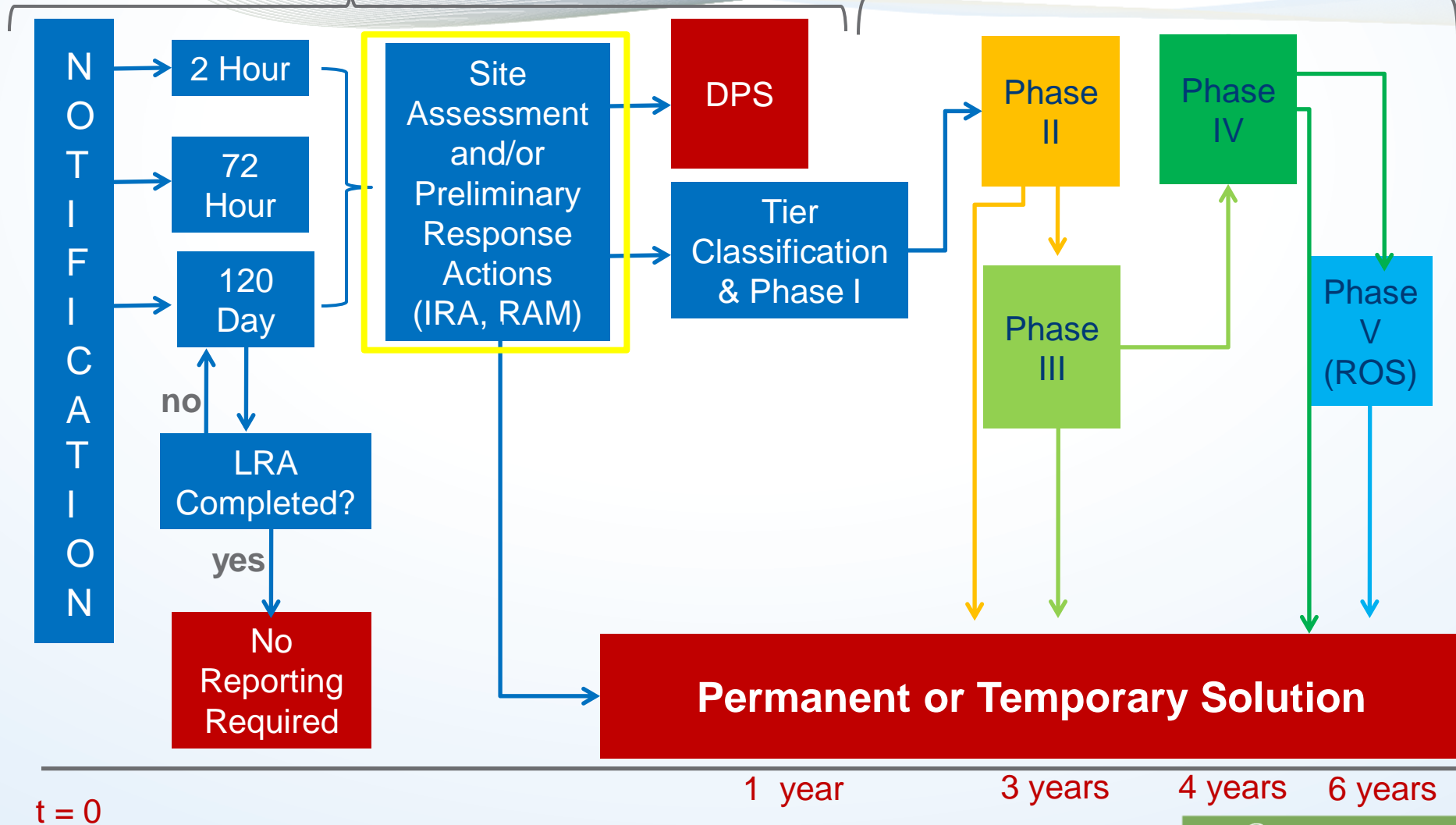
Releases Entirely Contained within Building or Utility Vault

4

Preliminary Response Actions

1 year

5 years



$t = 0$

1 year

3 years

4 years

6 years

MCP Subpart D - 310 CMR 40.0400s

- Actions taken prior to Tier Classification
 - Though may continue past Tier Classification
- Sufficient for complete evaluation and remediation of many releases
- If not sufficient, must Tier Classify and conduct additional Risk Reduction Measures or Comprehensive Response Actions

What triggers an IRA?

- Releases or threats of release that require 2-hour or 72-hour notification
- MassDEP determines that immediate or accelerated response actions are necessary

IRA Activities

- Assess
- Contain/remove
- Eliminate and/or mitigate critical exposure pathways (vapor intrusion & drinking water impacts at residences and schools)
- Prevent impacts to public water supplies

- Propose IRA at time of notification
 - Follow-up written plan within 60 days
- IRA completion report when finished (unless Permanent Solution filed within 120 days)
- If IRA goes longer than 120 days, status report required at 120 days and every 6 months thereafter
- IRAs that do not require prior approval
 - Assessment only
 - If delay would substantially exacerbate conditions
 - Excavation of 100 cy at UST closure

- Intended to reduce risks and/or increase cost effectiveness by accelerating certain response actions
- Type of RAM Activities
 - Excavate soil
 - Off-site disposal – can remove up to 500 cy of soil above RCs
 - Treatment/recycling – up to 1,500 cy of soil above RCs
 - Recover NAPL
 - Recover or treat groundwater
 - Extract soil vapor
- Often used to
 - Pilot test potential remedial technology
 - Remove soil or treatment dewatered groundwater during building construction on contaminated properties

- **Submit RAM Plan to MassDEP**
 - Approval not required, unless specified by MassDEP in writing or for Application of Remedial Additives Near Sensitive Receptors as specified at 310 CMR 40.0046(3)
 - Activities must be initiated within one year
 - Special risk assessment requirements for “Construction RAMs”
- **RAM completion report when finished (unless Permanent Solution filed within 120 days)**
- **If RAM goes longer than 120 days, status report required at 120 days and every 6 months thereafter**

Utility Release Abatement Measures (URAM)

Provides a way to deal with contamination encountered during certain utility construction/repair projects

1

Conducted by utility company or site owner at utility company's request

2

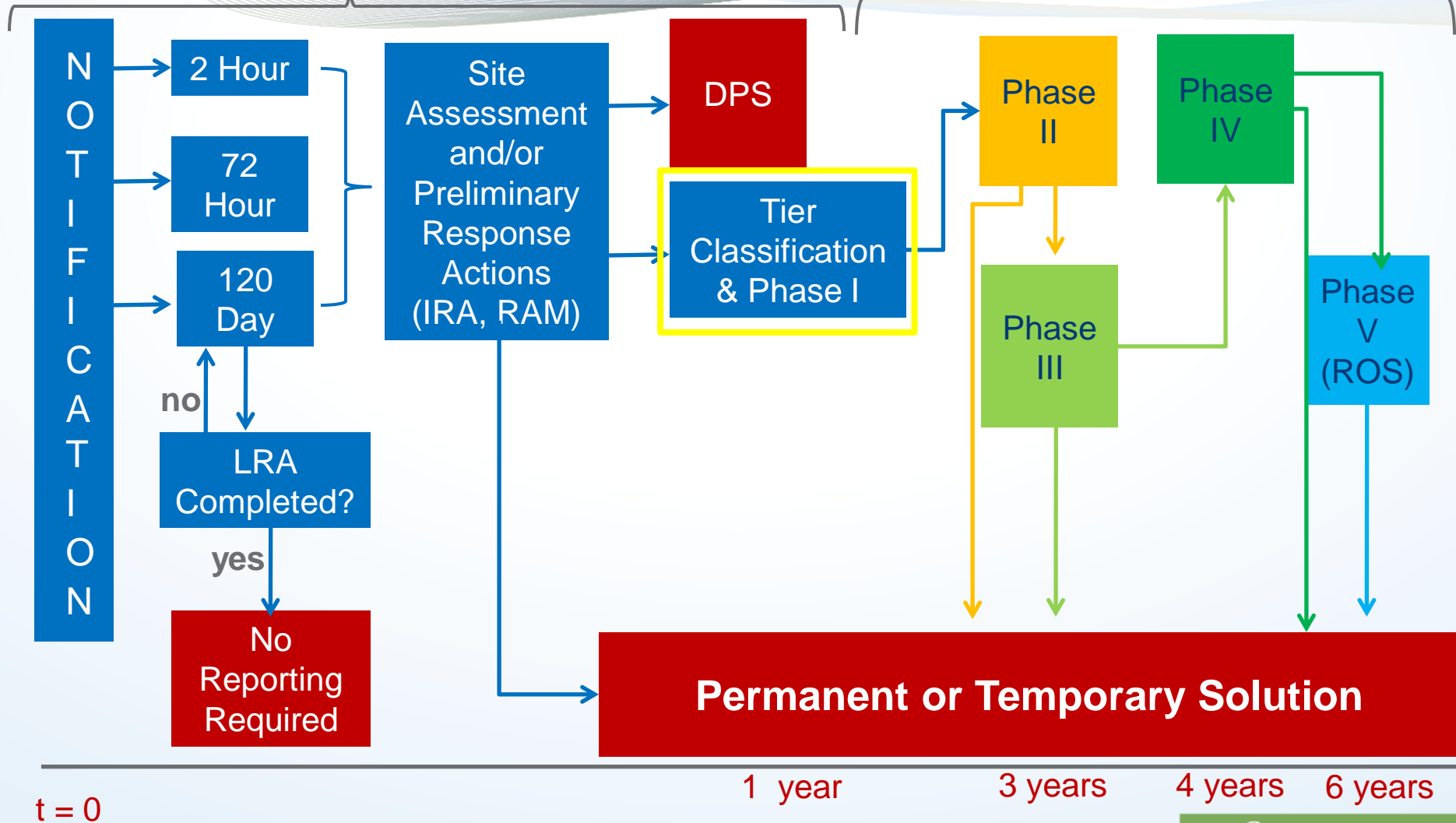
Allowed for 120-day releases only

3

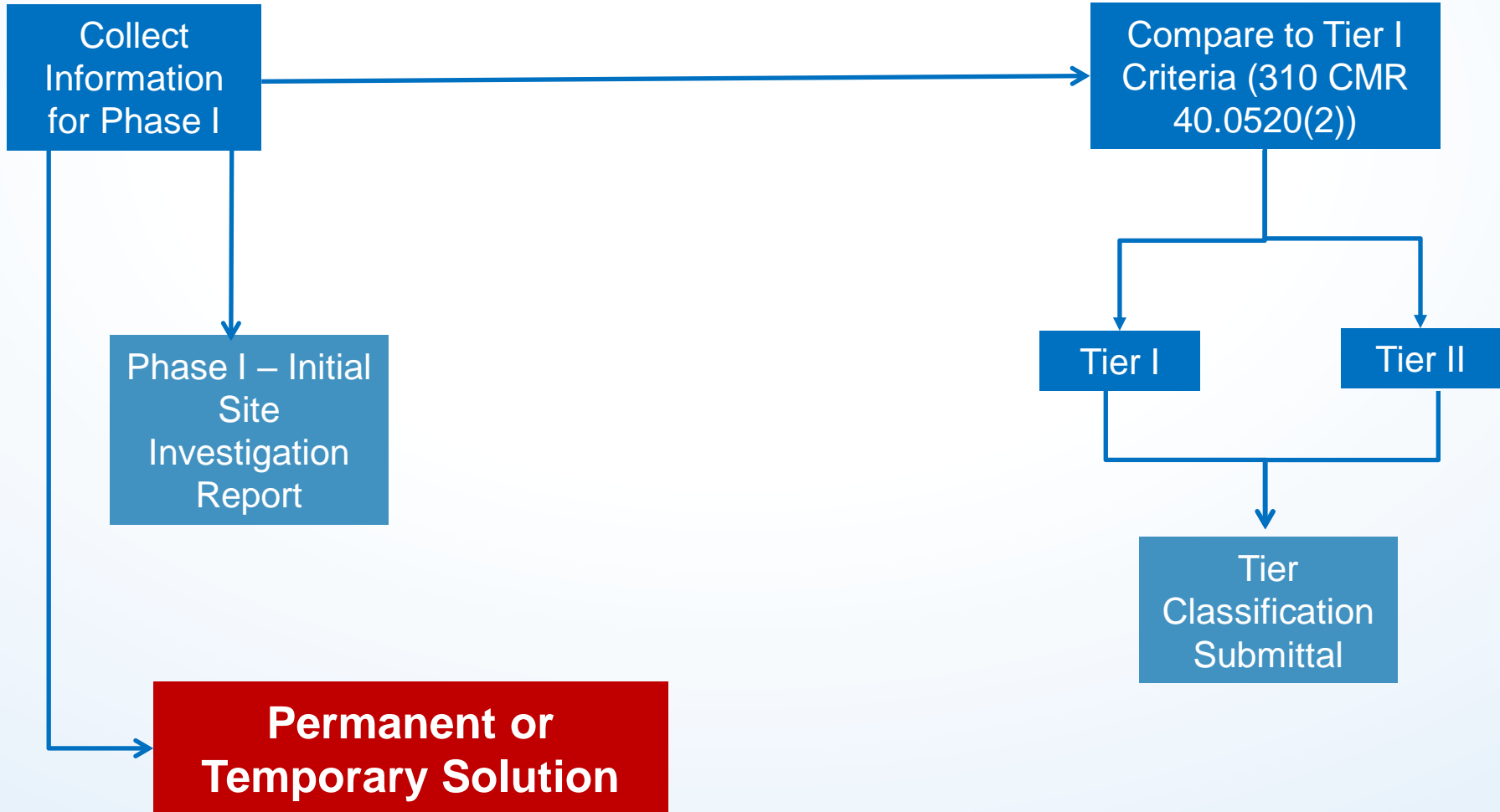
Phase I & Tier Classification

1 year

5 years



Phase I & Tier Classification



Phase I – Initial Site Investigation

Purpose

Document findings and results of Preliminary Response Actions

Supports Permanent Solution Statement prior to Tier Classification

Contents of Report

Site Information

Disposal Site Map

Disposal Site History

Site Hydrogeological Characteristics

Nature and Extent of Contamination

Migration Pathways and Exposure Potential

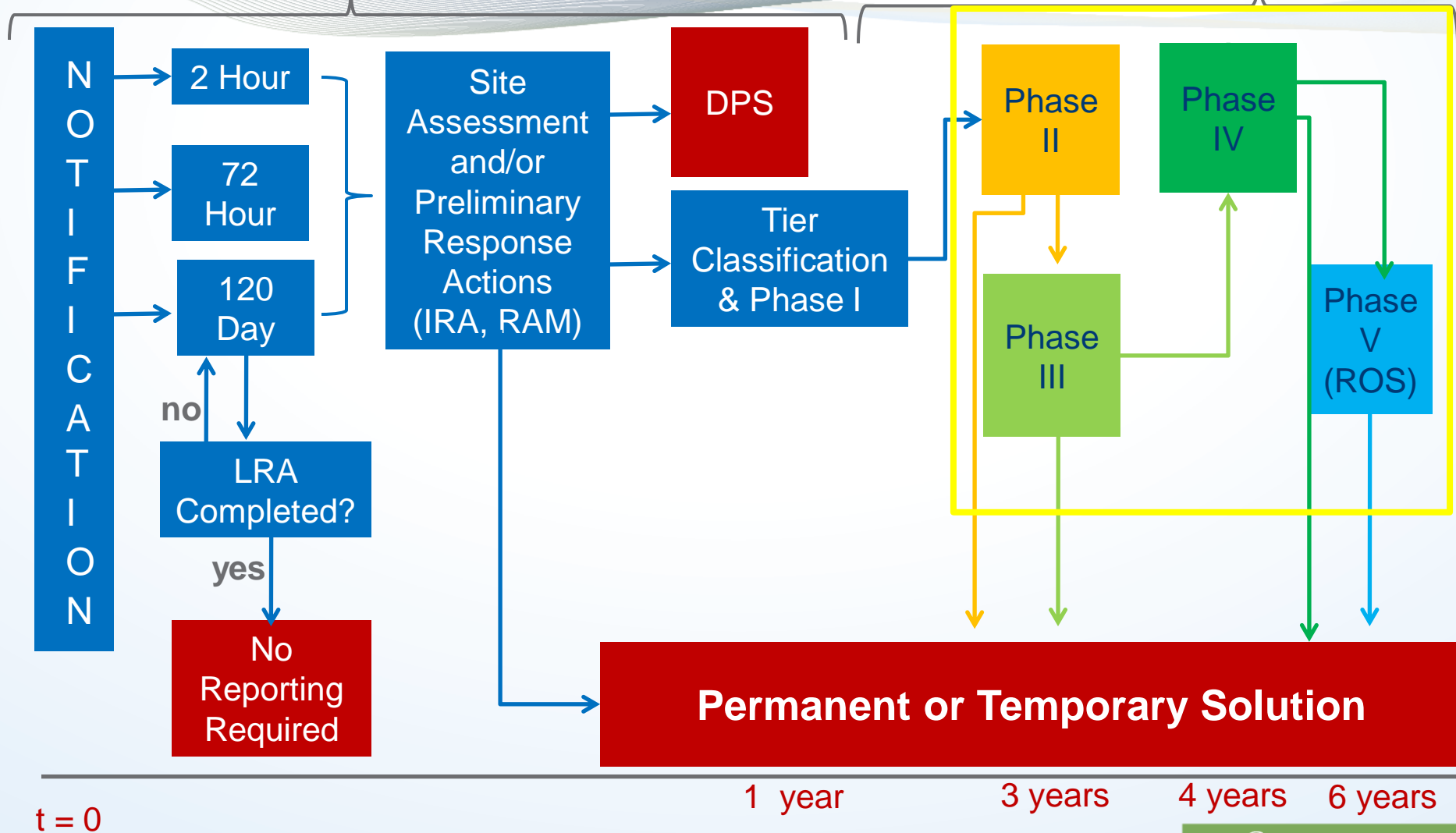
- **Tier 1 Criteria**
 - Groundwater concentrations > RCGW-1 in IWPA or Zone II of PWS
 - Imminent Hazard present at time of Tier Classification
 - One or more remedial actions are required as part of an IRA
 - One or more remedial actions are required as part of an IRA to eliminate or mitigate a CEP

- **Tier 1 Noncompliance Sites**
 - Failure to submit Permanent Solution Statement or Tier Classification in time
 - Other non-compliance (MassDEP can reclassify)

Comprehensive Response Actions

1 year

5 years



$t = 0$

1 year

3 years

4 years

6 years

MCP Subpart H - 310 CMR 40.0800s

Phase II - Comprehensive Site Assessment

Phase III - Identification and Selection of Comprehensive Remedial Action Alternatives

Phase IV - Implementation of the Selected Remedial Action Alternative

Phase V - Operation, Maintenance and/or Monitoring

Comprehensive Site Assessment (CSA)

Identification of source nature and extent of potential impacts

Risk characterization: Identification of the risk of harm posed by the disposal site to health, safety, public welfare and the environment

Identification of need to conduct remedial actions

Remedial Action Plan (RAP)

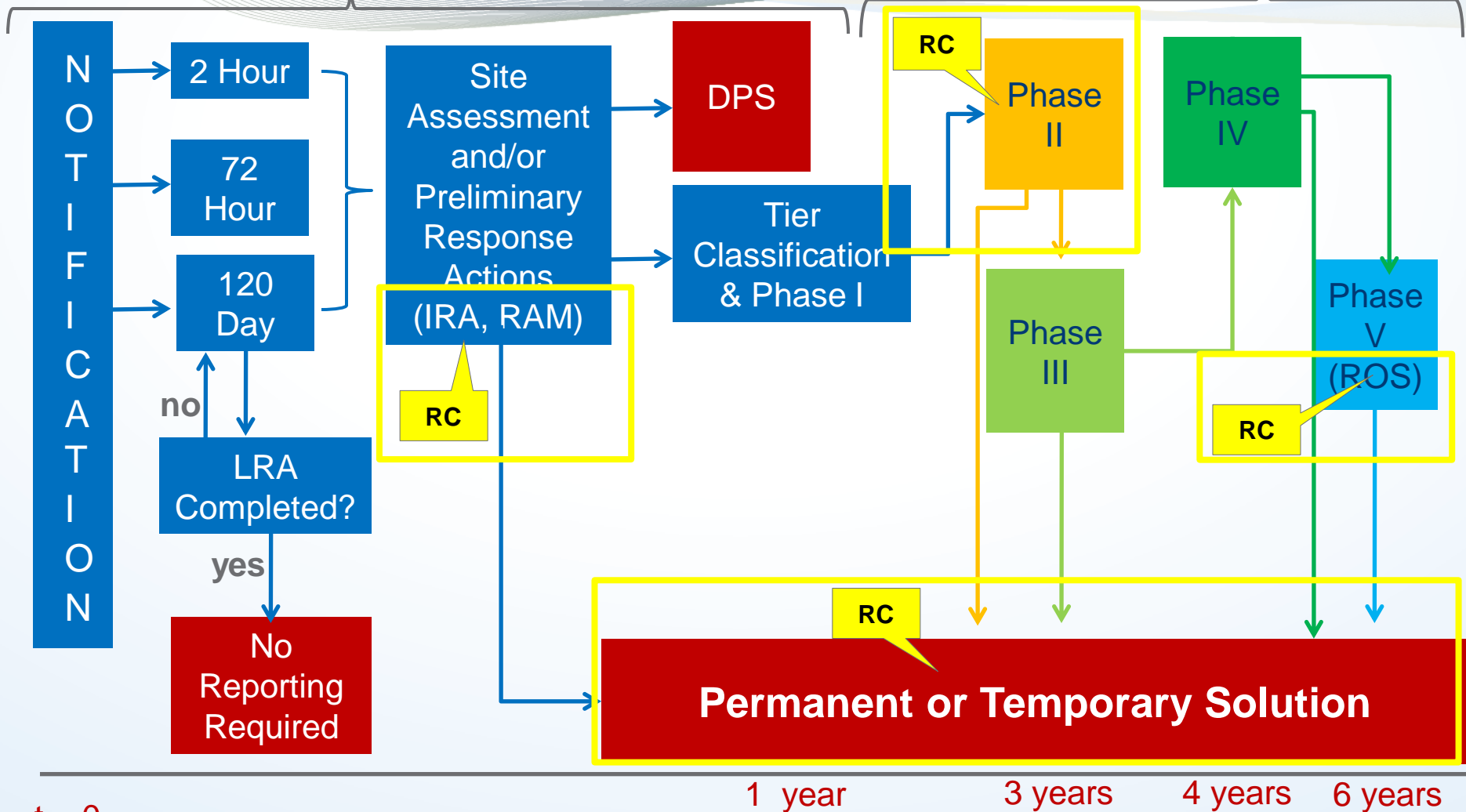
- Evaluate, select, and justify selection of the proposed remedial action alternative (RAA)
- If a Permanent Solution was selected:
 - How will RAA achieve a condition of No Significant Risk?
 - Evaluate feasibility of achieving/approaching background
 - If leaving concentrations > UCLs
 - Evaluation of the feasibility of reducing concentrations to below UCLs
- If a Temporary Solution was selected:
 - How will RAA eliminate Substantial Hazards?
 - Evaluate feasibility of implementing a Permanent Solution
 - Definitive and enterprising steps

- Remedy Implementation Plan (RIP)
- Status Reports – every six months
- As-Built Construction Plan
 - Required if significant variation from RIP OR if an engineered barrier or containment/immobilization system was constructed
- Final Inspection Report/Completion Statement
 - Description of activities/findings, modifications from the RIP, list of required permits
 - Determination that the comprehensive response action meets the projected design standards

- **Remedy Operation Status (ROS)**
 - Special Phase V category
 - Remedy must be designed to achieve a Permanent Solution
 - Sources must be eliminated or controlled
 - Substantial Hazards must be eliminated
 - Effect of ROS
 - 5-year deadline to achieve Permanent or Temporary Solution no longer applies
 - Tier Classification extensions not required
 - Liability protection
- **Status Reports – every six months**
- **Completion Statement**
 - Description of residual OHM and measures in place to limit exposure
 - Justification for terminating OMM

1 year

5 years



$t = 0$

1 year

3 years

4 years

6 years

MCP Subpart I – 310 CMR 40.0900s

MCP RC Types

- No Significant Risk Evaluation (NSR) – current and potential future risks
- Substantial Hazard Evaluation (SHE) – current risks only
- Imminent Hazard Evaluation (IHE) – current, short-term risks

MCP RC Methods

- Method 1: Comparison to generic standards published in MCP
- Method 2: Comparison to M1 standards and/or new or modified standards (may reflect site-specific fate & transport)
- Method 3:
 - Site-specific “forward” risk assessment
 - Comparison of calculated risk estimates to MCP risk limits
 - Noncancer Hazard Index (HI) of 1
 - Excess Lifetime Cancer Risk (ELCR) of 1 in 100,000 (1×10^{-5})

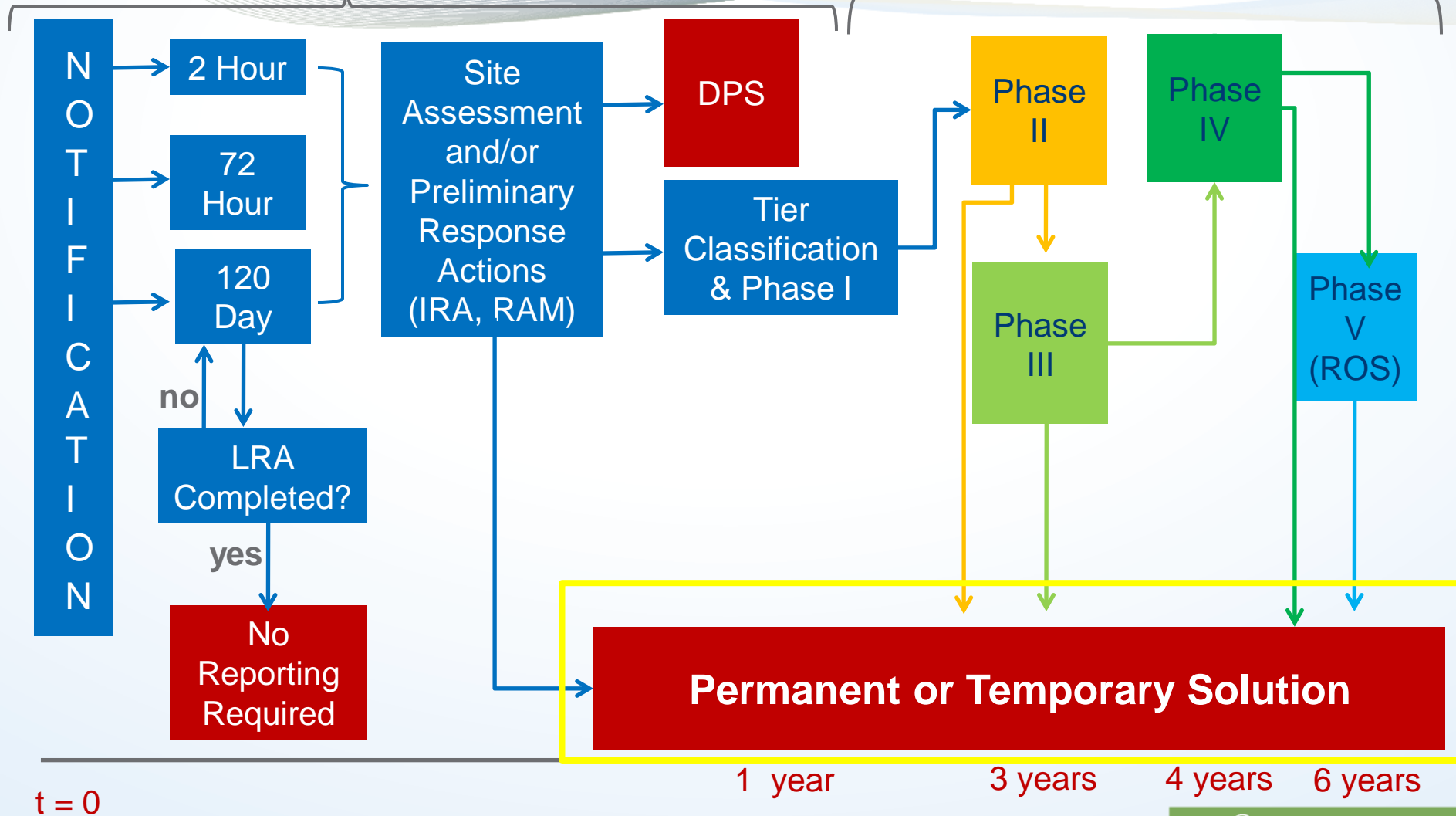
When do you need a RC

When?	RC Type	Possible RC Method
IRA	Imminent Hazard Evaluation	Method 3
Construction RAM	No Significant Risk	Method 1, 2, or 3
Phase II	No Significant Risk	Method 1, 2, or 3
ROS	Substantial Hazard Evaluation	Method 3
Temporary Solution	Substantial Hazard Evaluation	Method 3
Permanent Solution	No Significant Risk	Method 1, 2, or 3

Permanent or Temporary Solution

1 year

5 years



MCP Subpart J. – 310 CMR 40.1000s

“Closure” Document under the MCP

- Can be achieved at any point in MCP process and within the timeframes outlined in 310 CMR 40.0500

Activity and Use Limitations (AUL) can be used to restrict future use

Remedial actions have been implemented to achieve No Significant Risk (NSR), sources are eliminated/controlled, and OHM reduced to background to the extent feasible.

Permanent Solutions “with No Conditions” – no UCL exceedances, no AULs, no “Conditions”

Permanent Solution with Conditions required for sites with AULs

Permanent Solutions that rely on the following limitations, assumptions, or conditions do not requires AULs:

- BMPs for noncommercial gardening
- OHM consistent with Anthropogenic Background
- Residual contamination with a public way or rail right-of-way
- Exceedance of GW-2 where no occupied building or structure currently exists

Assessment has shown that “No Substantial Hazard” exists or has been achieved through remedial action, sources are eliminated, controlled or mitigated to the extent feasible.

Other Requirements

- Temporary Solution must be preceded by DPS or Phase II and Phase III
- Plan for definitive and enterprising steps
- 5-year periodic evaluations

MCP Subpart K – 310 CMR 40.1100s

- MassDEP audits about 20% of sites
- Random Audit
 - Conducted within two years of Permanent or Temporary Solution
- Targeted Audit
 - Conducted at anytime
 - Examples
 - Sites with AULs
 - PCE Sites
 - Specific PRP, LSP, etc.

Standard Track:

- Bachelor's degree
- 8 years of "Total Professional Experience" (Master's and PhD count toward this)
- 5 years of "Relevant Professional Experience" – applicant is a principal decision maker
- 4 professional references
- 2 project descriptions for each position description

Start Early!

1

Prepare project descriptions as you complete the project even if you're years away from applying

2

Create a new position description if your responsibilities changed even if your title did not

3

Connect with other aspiring LSPs for support, encouragement, and accountability

4

- <https://www.mass.gov/how-to/apply-for-the-lsp-examination#how-to-apply>:
 - Application
 - Fee information
 - Instructions
- <https://www.mass.gov/service-details/taking-the-lsp-examination>:
 - Content outline
 - Reference list
 - Studying resources
 - Schedule

Questions?



Jessica Yeager, PE(MA), LSP

jyeager@geosyntec.com

617-992-9065

Moderated Discussion

Jessica Yeager

Program Chair

Senior Engineer

Geosyntec Consultants

