



**Michigan Department of Environmental Quality
Michigan Department of Natural Resources
Michigan Department of Agriculture and Rural Development
POLICY AND PROCEDURE**

Original Effective Date: February 3, 2014	Subject: Response Plan for Aquatic Invasive Species in Michigan	
	Revised Date:	Number: QOL-1-2014 Page 1 of 10

A Quality of Life (QOL) Policy and Procedure cannot establish regulatory requirements for parties outside of the QOL. This document provides direction to QOL staff regarding the implementation of rules and laws administered by the QOL. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION:

The most effective and efficient means of reducing the effect of invasive species beyond prevention is to respond rapidly, prudently, and efficiently to new invasions or existing outlier populations of invasive species. Even the best prevention program cannot keep all invasive species out, but a program that responds prudently, uses cost-effective methods, relies on science-based decision-making, and engages key stakeholders will help minimize the threat of invasions negatively affecting the waters of Michigan.

This response plan for aquatic invasive species (AIS) is an internal, interagency decision support tool for the Michigan Department of Environmental Quality (MDEQ), Michigan Department of Natural Resources (MDNR), and Michigan Department of Agriculture and Rural Development (MDARD). This plan outlines the steps to follow after receiving a report of an AIS and serves as a guide for determining when a response is appropriate and what type of response should be considered. The plan has varying degrees of application, relevance, and utility, depending upon the details of a particular invasion or report.

ACKNOWLEDGEMENTS:

This policy and procedure was produced by the State of Michigan's AIS Core Team (see below) and was heavily influenced and guided by similar AIS response plans from the Invasive Species Council of Pennsylvania and the Ohio Department of Natural Resources' Division of Wildlife.

AUTHORITY:

Communication and collaboration with pertinent agency staff, management, stakeholder, and other groups is critical throughout the plan and should be carefully considered during each action. Michigan has established an AIS Core Team composed of representatives from each of the state agencies with environmental or natural resource responsibilities: MDEQ's Water Resources Division and Office of the Great Lakes; MDNR's Fisheries Division, Wildlife Division, Parks and Recreation Division, Forest Resources Division, and Law Enforcement Division; MDARD's Pesticide and Plant Pest Management Division and Animal Industry Division; and the Michigan Department of Transportation's Project Planning Division. The AIS Core Team should

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be kept informed of new reports of AIS and subsequent action, or nonaction, as a result of this response plan.

In general, the MDEQ, MDNR, and MDARD share responsibility for AIS policy, legislation, regulation, education, monitoring, assessment, management, and control. In the event of a newly-identified AIS in Michigan waters, the departments will work together to identify a lead agency depending on the taxa of concern, the location of the issue, and existing agency authority.

The MDNR is responsible for conserving, protecting, and managing the use and enjoyment of the state's natural resources with a focus on fisheries, wildlife, parks and recreation, forests, mineral and fire management, land and facilities, and law enforcement. In particular, the MDNR's Fisheries and Wildlife Divisions are currently involved in response activities for Bighead carp (*Hypophthalmichthys nobilis*), Silver carp (*H. molitrix*), Sea lamprey (*Petromyzon marinus*), and several priority invasive aquatic plants, respectively. MDNR's Forest Resources Division actively works to prevent and control invasions of non-native insects and diseases, such as emerald ash borer and beech bark disease that impact forest resources and habitat.

The MDARD protects the food, agricultural, environmental, and economic interests of the citizens of Michigan and is positioned to provide expertise on emergency response, as well as invasive aquatic plants and organisms in trade.

The MDEQ is responsible for protecting and sustaining the health of the state's citizens and natural resources. Within the MDEQ, the Water Resources Division is responsible for coordinating the implementation of Michigan's AIS State Management Plan. The MDEQ also houses the Office of the Great Lakes, which has lead responsibility for the state's role in the development of interjurisdictional policies, programs, and initiatives affecting the water and related natural resources of the Great Lakes-St. Lawrence River Basin. The Office of the Great Lakes is a primary point of contact for many regional Great Lakes' entities.

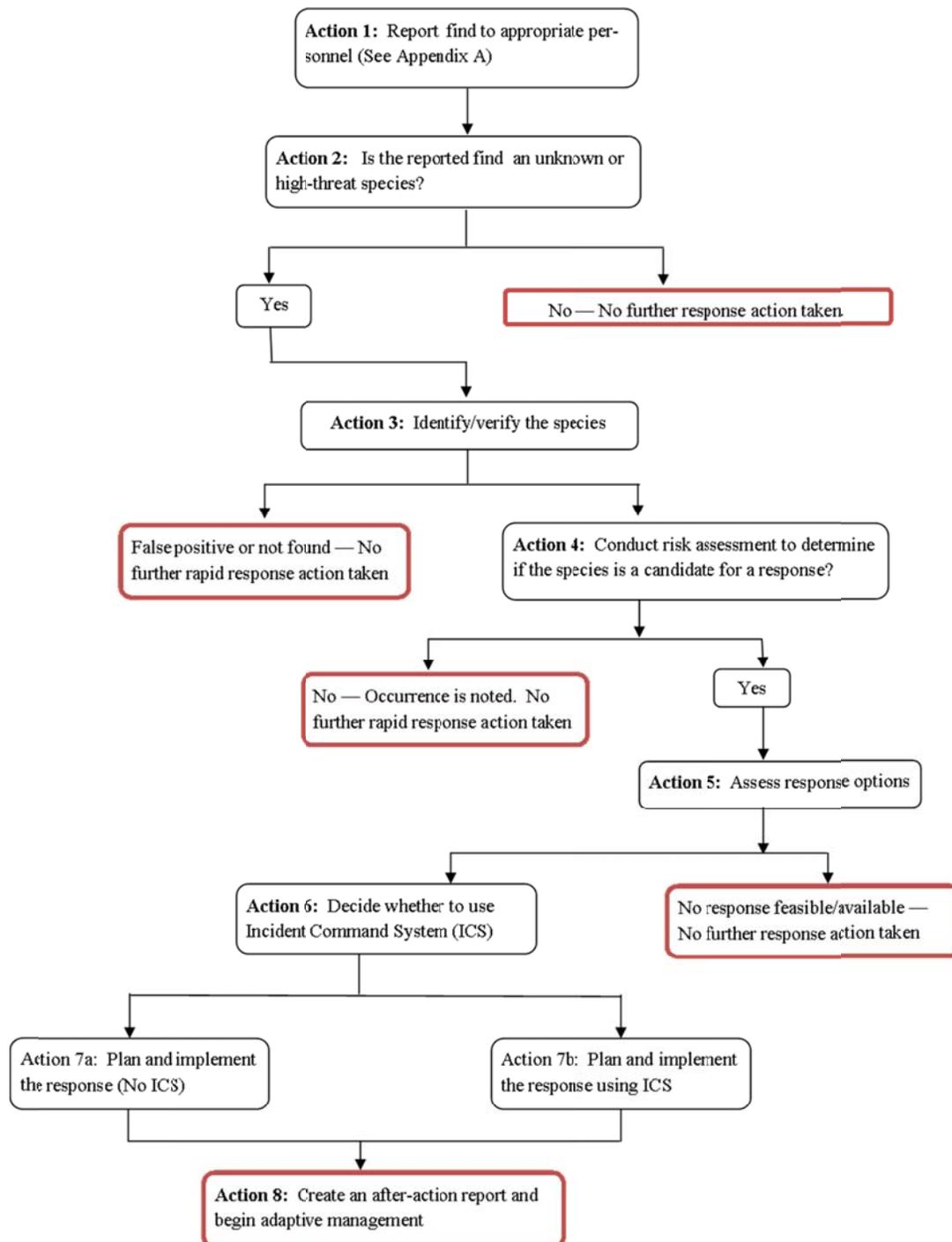
POLICY:

The MDEQ, MDNR, and MDARD will coordinate response to AIS threats while operating under existing authorities and areas of expertise.

PROCEDURES:

The response action steps given below and diagrammed in Figure 1 should be followed chronologically, but the process may end at varying points depending upon the details of each specific situation. In addition, this plan is designed to complement and be used in conjunction with other existing response plans (e.g., Michigan's AIS State Management Plan, Michigan's Asian Carp Management Plan, and the Asian Carp Binational Rapid Response Plan). The response flowchart (Figure 1) is intended to accompany the narrative section of the response plan, below, but can also be used as a summary/overview of the response plan actions. Action 1 commences upon receiving a report of an AIS.

Figure 1: AIS Response Flow



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Action 1: *Report finding of invasive species to appropriate personnel*

Reports of invasive species come from a wide variety of sources, including the general public, partner organizations, and state agencies. The agency receiving the report will record the information listed below on the *Invasive Species Reporting Work Sheet* (Appendix A) and, if necessary, use Appendix B, *Contacts for Invasive Species Information in Michigan* (also online at www.michigan.gov/invasivespecies), to direct the report to the proper state agency staff. Transferred reports of high-priority species (Appendix C) should be confirmed as having been received by appropriate staff to ensure timely response and so that the information is not inadvertently lost.

The following information should be recorded by/from the person submitting a report of a new invasive species:

- Name and contact information (phone and e-mail) of reporter and/or data collector.
- Type of AIS being reported (e.g., fish, invertebrate, plant, etc.).
- Common and scientific name of species being reported (if known).
- Date of observation.
- Location of observation (water body, township, county, latitude/longitude, and any additional details), habitat, and environmental condition of the site.
- Photos, if available (photos are a priority for preliminary identification).
- Additional detailed information (e.g., approximate size, physical description, estimate percent cover for plants, living or preserved specimens obtained, etc.).

Action 2: *Is the report an unknown or high-threat species?*

When an AIS report is received, the appropriate staff (as determined from Action 1, above) uses his or her best professional judgment to determine threat level and priority. If any of the following high-threat priority species are reported from a credible source with an appropriate level of documentation (photos, detailed description, etc.), and species identification and verification (Action 3) is initiated:

- Silver carp (*Hypophthalmichthys molitrix*)
- Bighead carp (*Hypophthalmichthys nobilis*)
- Grass carp (*Ctenopharyngodon idella*)
- Northern snakehead (*Channa argus*)
- Red swamp crayfish (*Procambarus clarkia*)
- Parrot feather (*Myriophyllum aquaticum*)
- European frog-bit (*Hydracharis morsus-ranae*)
- Flowering rush (*Butomus umbellatus*)
- Brazilian elodea (*Egeria densa*)
- Hydrilla (*Hydrilla verticillata*)
- Water chestnut (*Eleocharis dulcis*)
- Water hyacinth (*Eichornia crassipes*)

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- Water lettuce (*Pistia stratiotes*)
- Nutria (*Myocastor coypus*)
- Any unknown aquatic plant or animal

Note: If the reported species is for any of the three Asian carp species shown above (Silver, Bighead, Black, and/or Grass), Michigan's Asian Carp Management Plan¹ and status report² should be used in conjunction with this more generalized response plan.

High-threat/priority reports may also include invasive species that represent previously-known invasive species from Michigan but are also:

- Outlier populations/occurrences – invasive species that may already be present in Michigan, but are being reported in a unique, new regional location (e.g., first occurrence for the Upper Peninsula, etc.).
- Threats to rare and endangered native species and/or habitat.
- A leading edge of an expanding invasive species occurrence.

If the reported species does not meet the above criteria, no further response action is taken using this procedure. The outcome of this action should be reported back to the original person or entity that submitted the report. The report may be noted, recorded, or shared with other entities, as appropriate.

Action 3: Identify/verify the species

Once it has been determined that a report is for a high-threat priority species, the agency with jurisdictional authority and/or the appropriate personnel, as identified in Appendix B, will facilitate verification of the report and/or specimen. If the report includes tribal lands, the appropriate department tribal coordinators need to be contacted. In some cases, Action 3 can occur in collaboration with the risk assessment in Action 4.

Newly-reported AIS must be verified by an expert who is recognized by the responding agency. When possible, and deemed necessary, specimens should be verified by a second expert and voucher specimens should be retained and stored properly for future analysis. A site visit may also be necessary for species identification/verification if a specimen or sufficient evidence was not provided. In some instances, the information provided from the initial report in Action 1 may be enough to properly identify a species and verify its existence. This is particularly true if a voucher specimen is provided by the original reporter. Proper permitting should be obtained for federal or state restricted and prohibited invasive species during this action.

¹ Clapp, D. F., J. L. Mistak, K. M. Smith, and M. A. Tonello. 2012a. Proposed 2010 plan for the prevention, detection, assessment, and management of Asian carps in Michigan waters. Michigan Department of Natural Resources, Fisheries Special Report 60, Lansing.

² Clapp, D. F., J. L. Mistak, K. M. Smith, and M. A. Tonello. 2012b. Status report for the proposed 2010 plan for the prevention, detection, assessment, and management of Asian carps in Michigan waters, April 2012. Michigan Department of Natural Resources, Fisheries Special Report 61, Lansing.

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If the reported species is confirmed to be a native species (*false-positive* report), or a known occurrence of an AIS, then no further response action is taken. Similarly, if the species is unable to be found or located as reported, the responding agency may use its best professional judgment to end the response action or conduct a more thorough search. The report may be noted in a log to track common misidentifications and other reporting trends. Results from this action may be communicated to relevant partners and stakeholders, as appropriate.

Initial communication with key partners, stakeholders, and other appropriate entities should be considered during this action. For example, if the reported AIS has been verified to be an invasive plant species regulated under the federal noxious weed list or an injurious species regulated under the Lacey Act, Title 16 of the United States Code, §§ 3371-3378, as amended, the U.S. Department of Agriculture and/or the U.S. Fish and Wildlife Service should be notified. Entities with jurisdictional and/or management authority for the location of the infestation should also be considered for contact during this action. In some cases, property owners may need to be contacted for permission so that verification can occur. A press release or other public notification should also be considered after positive verification has occurred to facilitate additional detections, to aid in containment and limit the spread of the invasion, as well as to raise awareness about the issue.

Action 4: *Conduct risk assessment to determine if the species is a candidate for response*

Confirmation of a new occurrence of a high-threat priority AIS in the state or watershed will result in a risk assessment of the invasion and specific situation. In some cases, this process can occur in collaboration with Action 3, above. AIS reports being considered as part of this action are deemed to represent high-threat priority AIS. The specific details of a particular occurrence or invasion (magnitude, location, etc.) will inform the decision about whether a response is feasible and necessary. The risk assessment conducted as part of Action 4 is intended as an information gathering process to determine the potential environmental, economic, or human health threat, and evaluate if the AIS and the particular details of the occurrence make it a candidate for a response. There are some quantitative and concrete criteria that can be used for the assessment; however, best professional judgment of the circumstances will be used to determine if a response is appropriate to minimize threat.

The agency with jurisdictional authority and/or the appropriate personnel, with the assistance from other sources if needed, will conduct the risk assessment and record related details on the *Invasive Species Response Risk Assessment Work Sheet* (Appendix D). The following factors may be used:

- Is the species a new invasion to the state or to a geographic location within the state?
- Is the species known to cause significant impacts in its native range and/or is the species known to be invasive outside of its native range?
- Is there knowledge of the source of introduction and risk of reintroduction or further spread?
- Was the invasion detected early?
- Is the infestation small and localized?

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- Can the species be quarantined/contained while control measures are planned and implemented?
- Is there acceptance that not responding will have serious impacts?
- Is the location public or directly connected to public resources (i.e., public land or water)?
- How quickly should a response occur?

Following the risk assessment, the invasion should be classified as either low-, high-, or unknown risk. If the outcome is low risk, the occurrence is noted but no further response action is taken using this plan. If the outcome is high or unknown risk, proceed to Action 5.

Results from this action may be communicated to relevant partners and stakeholders, per the discretion of the responding agency. Nearby property owners (individuals and/or associations), municipalities (city, township, or county), and other relevant parties should be considered. Many of these entities may be valuable resources for conducting the risk assessment and may be able to provide information that might not otherwise be available to the responding agency.

The lead responding agency should also consider a press release during this action to raise awareness for the issue and stay in front of misinformation, rumors, and general questions. The press release should include mention of the initial report, confirmation of species identification, biological information, and appropriate results from the risk assessment in Action 4. Lastly, the press release should also give a general description of the next steps (“assess response options,” etc.) and provide a point of contact for questions and additional information.

Action 5: *Assess response options*

To determine the appropriate response options, previously-obtained scientific information on the species and the infestation will be used to evaluate response availability and feasibility. The agency with jurisdictional authority and/or the appropriate personnel, with the assistance from other sources, as appropriate, will assess the response options using best professional judgment. This assessment may include, but is not limited to, additional questions such as:

- Are known successful treatment/response options available?
- Are there serious environmental issues or regulatory hurdles that will lead to delays or greatly increase the cost of the response?
- Are there threatened or endangered species present?
- Is the AIS in a high-priority, natural community?
- Is the AIS in the vicinity of a public utility?
- Is the AIS on tribal lands? If yes, then appropriate tribal department coordinators should be contacted.
- Are there social or economic reasons to treat?
- Are there concerns with infrastructure or human safety?
- If permits are needed, can they be obtained in a timely manner?
- Is there a need for law enforcement or investigation associated with the infestation?
- What are the unintended or nontarget impacts of the response options?

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- Does the response require multiple uses or long-term control?
- Is there adequate physical access to the site?
- Will permission be necessary and available from local landowners?
- What are the current funding conditions for response efforts?
- Can response efforts be conducted by agency staff or will response efforts require contract assistance (or both)?
- Are there opportunities for collaboration with stakeholders and partner agencies?
- Are there regulatory requirements for the management and disposal of any materials removed during a response?

While some response options are focused on eradication, it is important to also consider options such as biological control, monitoring, and education and outreach efforts. If eradication is not feasible or desirable, alternate options may be useful for preventing further spread of the AIS or raising awareness in other locations that could potentially become invaded. In some instances, no response may be feasible or available and, therefore, no further response action may be taken. The results of Action 5 should be shared with appropriate partners, federal agencies, local municipalities, property owners, and other relevant entities to ensure consistent and accurate sharing of information. Once the assessment of response options is complete, proceed to Action 6.

Action 6: *Decide whether to use an Incident Command System (ICS)*

The first step in planning a response is to determine if an ICS is appropriate. Certain response scenarios can benefit from a highly coordinated and structured format, such as an ICS. An ICS is a systematic tool used for the command, control, and coordination of emergency responses and is commonly used by federal and state agencies to respond to emergency events such as floods, fires, and other high-threat situations. See Appendix E for more details on an ICS and how to implement the system for AIS response.

As with many of the above actions, determining whether or not to use an ICS in a response to AIS is ultimately decided using best professional judgment. Specific factors to consider include:

- Are federal resources or federal agencies involved?
- Is the response jurisdictionally or operationally complex (multiple agencies involved, several levels of authorities, AIS invasion and response cross state/federal borders, etc.)?
- Is the response action outside of the “routine operations” of the responding agency?
- Is chemical control part of the response action?
- What is the scale of the response action (local, regional, statewide, etc.)?
- Is there a significant threat to public health and safety?

An AIS response that does NOT involve an ICS typically includes a response that is within routine operations of the lead responding agency and is jurisdictionally simple (only one agency has clear authority).

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If an ICS will NOT be used for response planning and implementation, proceed to Action 7a. If an ICS will be used, proceed to Action 7b.

Action 7a: *Plan and implement the response (no ICS)*

This action involves the logistical and operational planning and implementation for the chosen response and is performed by the agency with jurisdictional authority and/or the appropriate personnel, with assistance from other sources, as appropriate. While Action 7a does not involve ICS protocols, some elements of an ICS may be used where applicable. For example, it may be beneficial to appoint an incident commander and a command team for decision-making.

In general, planning and implementing an AIS response without using an ICS should:

- Follow standard decision support and chain of command protocols of the lead responding agency.
- Follow standard lead responding agency policies for communication, safety, operations, logistics, equipment, personnel, and finance/spending.

The AIS Core Team should be notified of response planning and implementation. Additionally, communication should continue with any of the entities contacted during the previous actions to keep everyone updated and informed of progress. A second press release may be issued during this action to notify constituents and the general public of the response process and progress.

Once the response has been implemented, proceed to Action 8.

Action 7b: *Plan and implement the response using ICS*

This action uses the ICS to plan and ultimately implement a response. For more details about an AIS response involving an ICS, refer to Appendix E. The following are general steps/guidelines for an AIS response that involves an ICS:

Planning Phase:

- Appoint Incident Commander/Unified Command (IC/UC).
- IC/UC review of all previous information obtained during Actions 1-5.
- IC/UC refers to ICS flowchart to determine current status within the ICS "Planning P" (see Appendix E, Figure 2).
- Proceed as directed by IC/UC following the "Planning P" (appoint appropriate officers, etc.).
- Develop an Incident Action Plan (see Appendix E).

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Implementation Phase:

- Carry out the Incident Action Plan (IAP) following the "Planning P" (see Appendix E).
- Follow policies developed by IC/UC and appropriate ICS officers.
- Follow protocols and procedures developed by, and under the direction of, IC/UC and appropriate ICS officers.

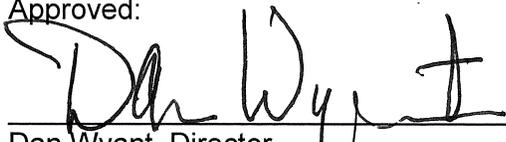
Once ICS response planning and implementation are complete, proceed to Action 8.

Action 8: *Create an after-action report and begin adaptive management*

An after-action report will be produced after each response to summarize and document the process from the initial report of the invasion through the conclusion of the response implementation. While a full after-action report is only needed for responses that continue beyond Action 4, other reports of AIS that end prior to Action 4 should still be documented for future reference and decision support.

Adaptive management is a process for continually improving management policies and practices by learning from the outcomes of operational programs. Adaptive management is crucially important to the implementation of a response to AIS. Ideally, adaptive management will include an evaluation of response effectiveness, mitigation and/or restoration of treatment areas, an assessment of reintroduction risks, and post-procedure monitoring. Additionally, education and outreach efforts should continue during the adaptive management phase of the response plan to help articulate/communicate outcomes of the response.

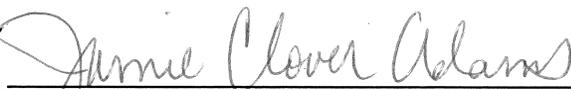
Approved:



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Appendix A: Invasive Species Reporting Work Sheet



Quality of Life Group

Departments of Environmental Quality, Natural Resources, and Agriculture and Rural Development

Invasive Species Reporting Work Sheet

Reporter's Contact Information:

Name (first and last):

Phone:

E-mail:

Type of invasive species being reported (check one):

- Fish Invertebrate Aquatic Plant Terrestrial Plant
 Mammal Bird Unknown

Common name:

Scientific name (if known):

Physical description (approximate size, color, density, etc.):

Specimen obtained: Yes No

Date of observation:

Location of observation (county, township, and/or water body):

Coordinates (latitude/longitude):

Additional location details (habitat, environmental conditions, etc.):

Appendix B: Contacts for Invasive Species Information in Michigan

Aquatic Invasive Species	Contact	E-Mail and Phone
<p>Aquatic Invasive Species Program Questions on overall Aquatic Invasive Species Program and Michigan's Aquatic Invasive Species State Management Plan. www.michigan.gov/aquaticinvasives</p>	<p>Sarah LeSage AIS Program Coordinator Water Resources Division, MDEQ</p>	<p>lesages@michigan.gov 517-284-5472</p>
<p>Aquatic Invasive Plants General questions about aquatic plant identification and early detection, rapid response, and monitoring. www.michigan.gov/invasivespecies</p> <p><i>Chemical Control</i> - Questions on the chemical control of aquatic species, permitting, and submerged plant identification. www.michigan.gov/deqinlandlakes</p> <p><i>Mechanical Removal</i> - Questions about mowing and other forms of mechanical control, permitting, and Great Lakes shoreline management. www.michigan.gov/deqwetlands (follow "Information" to "Great Lakes Shoreline Management")</p> <p><i>Phragmites</i> - Questions about identification and the control of invasive phragmites. www.michigan.gov/aquaticinvasives</p>	<p>Matt Ankney Wildlife Biologist Wildlife Division, MDNR</p> <p>Aquatic Nuisance Control Program Staff Water Resources Division, MDEQ</p> <p>Anne Hokanson Coastal Wetland Ecologist Water Resources Division, MDEQ</p> <p>Kevin Walters Aquatic Biologist Water Resources Division, MDEQ</p>	<p>ankneym2@michigan.gov 517-641-4903, Ext. 260</p> <p>DEQ-WRD-ANC@michigan.gov 517-284-5593</p> <p>hokansona@michigan.gov 517-284-5535</p> <p>waltersk3@michigan.gov 517-284-5473</p>
<p>Aquatic Invasive Animals Questions about Asian carp identification, status in Michigan, Michigan's Asian Carp Management Plan, other fish (e.g., snakehead) and aquatic animals (e.g., crayfish). www.michigan.gov/asiancarp</p>	<p>Tom Goniea Fisheries Biologist Fisheries Division, MDNR</p>	<p>gonieat@michigan.gov 517-284-5825</p>
<p>Great Lakes Regional Coordination Questions on Great Lakes coordination, restoration, and management. www.michigan.gov/deqgreatlakes</p>	<p>Matt Preisser Lake Coordinator Office of the Great Lakes, MDEQ</p>	<p>preisserm@michigan.gov 517-284-5039</p>
<p>Ballast Water General questions on Michigan's ballast water program and Michigan's Section 401 certification. www.michigan.gov/aquaticinvasives</p> <p><i>Permits</i> - Questions on Michigan's ballast water permit and application. www.michigan.gov/deqnpdes</p> <p><i>Reporting</i> - Questions regarding the requirement for oceangoing vessels and nonoceangoing vessels to report compliance with ballast water management practices. www.mi.gov/ballastwaterprogram</p>	<p>Sarah LeSage AIS Program Coordinator Water Resources Division, MDEQ</p> <p>Sean Syts Permits Section Water Resources Division, MDEQ</p> <p>Roger Eberhardt Office of the Great Lakes, MDEQ</p>	<p>lesages@michigan.gov 517-284-5472</p> <p>syts@michigan.gov 517-284-5469</p> <p>eberhardtr@michigan.gov 517-284-5055</p>

Appendix B: Contacts for Invasive Species Information in Michigan

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<i>Terrestrial Invasive Species</i>	<i>Contact</i>	<i>E-Mail and Phone</i>
Terrestrial Invasive Plants, Mammals, and Birds Questions about identification, management, and control of terrestrial invasive species. www.michigan.gov/invasivespecies	Sue Tangora Wildlife Biologist Wildlife Division, MDNR	tangoras@michigan.gov 517-284-6223
Insects <i>Agricultural and Landscape Pests</i> - Questions about invasive species that impact agriculture and landscapes. MDARD Plant Pest Management <i>Forest Pests</i> - Questions about invasive insects, tree diseases, and invasive species impacts to forestry. www.michigan.gov/invasivespecies (follow "Invasive Species Links" to "Forest Pests")	Mike Bryan Pesticide and Plant Pest Management Division, MDARD Ron Murray Forest Resources Division, MDNR	bryanm@michigan.gov 517-284-5648 murrayr@michigan.gov 517-335-3353

<i>General (Aquatic and Terrestrial) Invasive Species</i>	<i>Contact</i>	<i>E-Mail and Phone</i>
Invasive Species Laws/Regulations Questions about Part 413, Transgenic and Nonnative Organisms, of the NREPA; prohibited and restricted species law, other regulations, species identification, and permits. www.michigan.gov/invasivespecies (follow "Invasive Species Laws" link)	<i>Plants and insects:</i> Mike Bryan Pesticide and Plant Pest Management Division, MDARD <i>All other species:</i> Tom Goniea Fisheries Biologist Fisheries Division, MDNR Steve Huff Law Enforcement Division, MDNR	bryanm@michigan.gov 517-284-5648 gonieat@michigan.gov 517-284-5825 huffs@michigan.gov 231-922-5280, Ext. 6804
State Parks and State-Administered Boat Launches Questions about invasive species and associated issues in state parks and at state-administered boat launches.	Alicia Ihnken Stewardship Analyst Parks and Recreation Division, MDNR	ihnkena@michigan.gov 517-284-6129
Enforcement To report invasive species law/regulation violations, please call the MDNR's Report All Poaching (RAP) Line.	RAP Line Law Enforcement Division, MDNR	1-800-292-7800
Disposal of Invasive Species Waste Materials Questions about regulatory requirements and disposal of invasive species materials from a response/control program.	Steve Sliver Office of Waste Management and Radiological Protection, MDEQ	slivers@michigan.gov 517-284-6595
Additional Information For general inquiries, or if none of the above contacts fit with your question.	Environmental Assistance Center, MDEQ	1-800-662-9278

Appendix C: Reporting Aquatic Invasive Species in Michigan

Aquatic Invasive Species “Watch List” (AIS that should be reported immediately and directly to staff)

The AIS on the watch list (categorized by taxa below) are priority species that have been identified as being an immediate and significant threat to Michigan’s natural resources. These species have either never been confirmed in Michigan or have very limited distribution. Early detection and timely reporting of these species is crucial for increasing the chances of stopping an invasion and limiting ecological and economic impacts. *Use the contacts listed below to report watch list species.*

Fish and other Aquatic Animals (except mammals)

- Asian carps
 - Silver carp (*Hypophthalmichthys molitrix*)
 - Bighead carp (*Hypophthalmichthys noblis*)
 - Grass carp (*Ctenopharyngodon idella*)
- Northern snakehead (*Channa argus*)
- Red swamp crayfish (*Procambarus clarkia*)
- Any unknown fish or aquatic animal (e.g., other crayfish or mussel)

Report the species above to Tom Goniea, Fisheries Division, MDNR, gonieat@michigan.gov or 517-284-5825; or for Asian carp, report electronically at www.michigan.gov/asiancarp

Aquatic Plants

- Parrot feather (*Myriophyllum aquaticum*)
- European frog-bit (*Hydrocharis morsus-ranae*)
- Flowering rush (*Butomus umbellatus*)
- Brazilian elodea (*Egeria densa*)
- Hydrilla (*Hydrilla verticillata*)
- Water chestnut (*Trapa natans*)
- Water hyacinth (*Eichhornia crassipes*)
- Water lettuce (*Pistia stratiotes*)
- Any other unidentified invasive plant

Report the species above to Matt Ankney, Wildlife Division, MDNR, ankneym2@michigan.gov or 517-641-4903, Ext. 260

Mammals

- Nutria (*Myocastor coypus*)

Report the species above to Sue Tangora, Wildlife Division, MDNR, tangoras@michigan.gov or 517-284-6223

Appendix D: Invasive Species Response Risk Assessment Work Sheet



Quality of Life Group

Departments of Environmental Quality, Natural Resources, and Agriculture and Rural Development

Invasive Species Response Risk Assessment Work Sheet

	YES	NO
1. Is the species a new invasion to the state or to a geographic location within the state? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>
2. Is the species known to cause significant impacts in its native range and/or is the species known to be invasive outside of its native range? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there knowledge of the source of introduction and risk of reintroduction or further spread? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>
4. Was the invasion detected early? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the infestation small and localized? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>
6. Can the species be quarantined/contained while control measures are planned and implemented? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>
7. Is there acceptance that not responding will have serious impacts? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>
8. Is the location public or directly connected to public resources (i.e., public land or water)? NOTES:	<input type="checkbox"/>	<input type="checkbox"/>

Appendix E: Incident Command System for Invasive Species Response

The Incident Command System (ICS) is a standardized, on-scene, all-hazards incident management approach that:

- Allows for the integration of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure.
- Enables a coordinated response among various jurisdictions and functional agencies, both public and private.
- Establishes common processes for planning and managing resources.

The ICS is flexible and can be used for incidents of any type, scope, and complexity because it allows users to adopt an integrated organizational structure to match the complexities and demands of single or multiple incidents at varying scales. In Aquatic Invasive Species (AIS) response situations, an ICS provides a systematic approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work together seamlessly.

In Michigan, if a response to a newly-reported AIS is determined to be appropriate for ICS (see **Action 6** in *Response Plan for Aquatic Invasive Species in Michigan*), the ICS organizational structure, planning, and implementation details, below, will be used.

The ICS organizational structure has five major functional elements: command, operations, planning, logistics, and finance and administration; and develops in a modular fashion, as needed, based on the size and complexity of the incident. As deemed necessary, the Incident Commander (IC) may appoint a Legal Advisor, Science Advisor, Safety Officer, Liaison Officer, and/or Public Information Officer, collectively known as the “Command Staff.” The “General Staff” may consist of an Operations Chief, a Planning Chief, a Logistics Chief, and a Finance/Administration Chief, or any necessary combination of these positions. The IC is ultimately responsible for establishment and expansion of the ICS organization, based on needs and requirements of the response.

The organizational structure of the AIS response personnel can impact the efficiency and effectiveness of overall AIS response operations, including staffing and resource decisions. Using an ICS as the core organizational framework, the IC can establish Sections, Branches, Groups, Units, and Strike Teams based on incident demands. Each of these functional divisions should be managed by a Chief, Director, Supervisor, or Leader as defined by the National Incident Management System. The management span of control for any one individual should not be less than three or exceed seven direct reports. Using this collaborative methodology, the framework for interoperability and compatibility will be established by the Command and General Staff as depicted in Figure 1.

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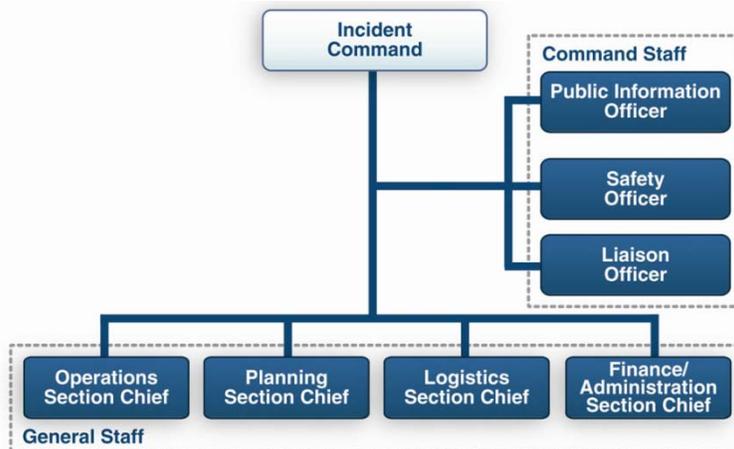


Figure 1: Basic ICS Organizational Structure

Incident command is accomplished using one of two approaches. When an incident (priority AIS invasion) occurs within a single jurisdiction, and without jurisdictional or functional agency overlap, a single IC is designated with overall incident management responsibility by the appropriate jurisdictional authority. However, when a response involves multiple jurisdictions, a single jurisdiction with multiagency involvement, or multiple jurisdictions with multiagency involvement, establishment of a Unified Command (UC) allows agencies with different legal, geographic, and functional authorities and responsibilities to work together effectively without affecting individual agency authority, responsibility, or accountability.

A UC is essentially the shared responsibility of command among several ICs. Attributes and responsibilities of a UC are identical to an IC. Indicators that the response should be managed by a UC include when an incident:

- Crosses geographic boundaries (e.g., two states).
- Involves various governmental levels (e.g., federal, state, or local).
- Impacts different functional responsibilities.
- Includes different statutory responsibilities.
- Has some combination of the above.

If you can answer “yes” to all four of the following questions for the particular type of incident that you are responding to, then a UC is appropriate:

- Does my organization have jurisdictional authority or functional responsibility under a law or ordinance for this type of incident?
- Is my organization specifically charged with commanding, coordinating, or managing a major aspect of the response?
- Does my organization have the resources to support participation in the response or organization?
- Does the incident or response operation impact my organization’s area of responsibility?

An AIS response can span multiple geographic or functional authorities and require the use of a UC. By working together as a team under a UC, all agencies with jurisdictional authority or functional responsibility for the incident jointly provide management direction through a common set of incident objectives and a single planning process. Under a UC, a single agency may still be designated as the overall lead and that agency’s official or preestablished representative is identified as the IC for incident management.

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Centralized, coordinated incident action planning is used to guide all response activities and specify communications management objectives throughout the entire ICS organization. Management by objectives is accomplished through a systematic planning process that:

1. Sets overall priorities within an assigned geographical area.
2. Determines appropriate strategies for use in achieving priorities.
3. Develops and issues assignments, plans, procedures, and protocols.
4. Establishes specific measurable tactics or tasks in support of defined strategies.
5. Allocates critical resources based on priorities.
6. Ensures objectives are met and strategies are followed.
7. Documents results to measure performance and facilitates corrective actions.

The systematic operation of AIS response actions may require a repetitive schedule to promote internal and external continuity during and following staffing transitions. During each operational period, situation reports (SITREP) help staff understand the incident situation and responders' efforts. The Incident Action Plan (IAP) establishes goals for future operational periods. Figure 2 illustrates the initial typical ICS operational cycle ("Planning P"). Subsequent cycles skip the initiation procedures and resources are continuously identified and distributed based on guidance from the IC, Operations Section Chief, and the IAP.

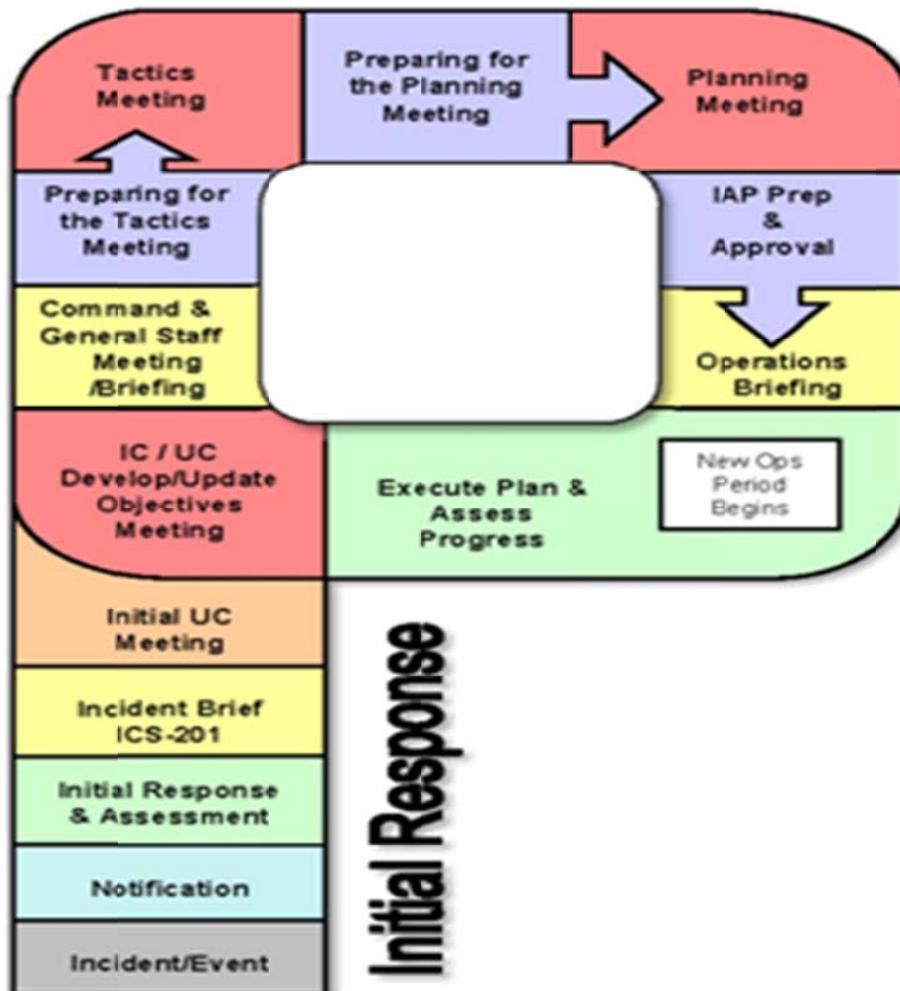


Figure 2: ICS "Planning P"

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An IAP is the central tool for conveying planning and operational instructions for all response participants and should provide a clear statement of objectives and actions, a basis for measuring work effectiveness and progress, and a record of accountability. The level of detail required in an IAP varies according to the size and complexity of the response. Regardless of the number of response partners, a single IAP should be generated by the IC/UC. The following explains the planning process required to develop an IAP.

The IAP is prepared by the Planning Section with direction from the Command Staff and input from the appropriate Sections, Branches, and Units of the General Staff. It should be written at the outset of response and revised continually. The goals and objectives are laid out and reviewed by each section based on its objectives. Each section is responsible for the following items to produce the IAP:

- Incident Command/UC
 - Incident objectives and strategy
 - Overall management and strategy
- Planning Section
 - Leadership of planning meeting and operation shift briefing
 - Preparation of the IAP
- Operations Section
 - Determination of resource requirements
 - Determination of division boundaries
 - Determination of tactics
 - Determination of Division/Group work assignments for Operations personnel
- Logistics Section
 - Determination of logistical objectives
 - Determination of logistical staging areas and facilities
 - Determination of logistical assignments and progress
 - Determination of redeployable resources accountability
 - Determination of in-transit resources status
 - Assurance that Logistics Section can support the IAP
- Finance/Administration Section
 - Determination of cost implications of incident objectives
 - Assurance that IAP is within the financial limits established by the IC

The contents of the IAP include all of the following:

- Event name – the name of the response event, typically based on location of the most-heavily impacted area and the type of event (e.g., “Operation Grand Haven Goby”)
- Date/time prepared – the date/time the IAP was prepared
- Operational period – the time frame the IAP covers
- General control objectives – a prioritized list of measurable tasks to be accomplished in the specified operational period
- Status updates – objectives completed during past operational periods, resource status/availability

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- Organization and chain of command – written description of the organizational/command structure
- Safety/hazard information
- Demobilization instructions/plans

The following job descriptions may serve as guidelines for selecting individuals to fill each Command and General Staff position. While not an exhaustive list, the “desired attributes” highlight important skills and personality characteristics that should be considered when appointing individuals to positions. Once the IC chooses his or her staff, the list of primary responsibilities may help the staff to understand his or her role in the ICS response process.

Incident Commander

Desired Attributes: Proven leader, experienced in risk management, and strong communicator.

Primary Responsibilities:

- Determine incident priorities.
- Establish incident objectives.
- Manage tactical operations.
- Assure safety of responders and public.
- Identify and order the necessary resources to accomplish objectives.
- Keep organization briefed.
- Evaluate contingencies.

Operations Section Chief

Desired Attributes: Leader, gives clear direction, and conscientious.

Primary Responsibilities:

- Manage tactical operations.
- Ensure tactical operations are conducted safely.
- Maintain close communications with the IC/UC.
- Identify required tactical resources to accomplish response objectives.

Planning Section Chief

Desired Attributes: Strong facilitator and communicator.

Primary Responsibilities:

- Keep everyone working together.
- Provide current, accurate situation status and concise briefings in support of the ICS process meeting schedule.
- Accurately track all resources.
- Facilitate the planning process by conducting timely meetings and working closely with the Operation Section Chief, Logistics Section Chief, and Command Staff.
- Ensure thorough documentation of all key decisions.
- Establish and maintain a complete list of things that must be accomplished, ensuring that each item on the list is assigned to the appropriate ICS element (e.g., Operations, Logistics, etc.).
- Ensure that a complete and thorough IAP is delivered in support of the operations.

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Logistics Section Chief

Desired Attributes: Experienced in logistical support, detail-oriented, and propensity for customer service and teamwork.

Primary Responsibilities:

- Anticipate incident's potential for growth and plan resource and personnel requirements accordingly.
- Develop and implement a resource ordering and tracking process.
- Ensure an effective communication network is in place to support incident operations.
- Support development of the IAP.
- Ensure that Command and General Staff are aware of excessive costs.
- Ensure appropriate demobilization (e.g., account for property and services, properly dispose of hazardous materials, etc.).

Finance/Administration Section Chief

Desired Attributes: Experienced in finance/administration, detail-oriented, and organized.

Primary Responsibilities:

- Ensure the proper completion of response cost/accounting documentation.
- Coordinate and manage response budgets and cost estimates.
- Provide financial support for contracting services, purchases, and payments.
- Project the "burn rate" of funding and advise the IC/UC when a ceiling must be increased.
- Maintain a daily inventory of all purchases.
- Forward all invoices to the appropriate agency processing center for payment.

Science Advisor

Desired Attributes: High scientific acumen, particularly in regard to AIS, knowledge of environmental implications of all eradication and/or control options, ability to communicate with scientists and nonscientists alike, and network of colleagues on whom to call if needed.

Primary Responsibilities:

- Consult with other scientific experts to inform decisions and assemble scientific advisory panel if necessary.
- Provide any necessary technical guidance to those preparing an IAP.
- Participate in planning process.
- Ensure rigorous oversight of response's scientific and environmental objectives.
- Provide expert input to IC and Command Staff on scientific and environmental decisions.
- Ensure Liaison and Public Information Officer are able to accurately relay scientific information to media, stakeholders, and others.

Legal Advisor

Desired Attributes: High legal acumen, particularly in regard to environmental laws and permitting, and network of colleagues on whom to call if needed.

Primary Responsibilities:

- Participate in planning process.
- Provide expert input to IC and Command Staff on laws that govern AIS response.
- Provide guidance on permits required for response actions.
- Oversee execution of all legal documents and contracts.
- Consult with other legal experts.

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Liaison Officer

Desired Attributes: Interpersonal skills, “highly organized,” knowledge of local stakeholders, and great communications skills via phone, in person, and by electronic means.

Primary Responsibilities:

- Provide agencies and organizations with a schedule for each incident and determine their information needs.
- Keep the IC/UC informed on issues dealing with assisting agencies, cooperating agencies, and stakeholders.
- Coordinate with the Public Information Officer.
- Coordinate VIP visits.
- Coordinate outreach efforts (e.g., community meetings).
- Oversee external messages to stakeholders.
- Serve as contact point for stakeholders, politicians and their staff, government agencies, nongovernmental agencies, and industry partners.
- Identify public and private concerns related to the incident.
- Maintain master list of contact numbers.

Public Information Officer

Desired Attributes: Experienced in public affairs and communications savvy.

Primary Responsibilities:

- Support the public communications needs of the IC/UC.
- Gather and disseminate incident information (e.g., number of responders).
- Work closely with the Liaison Officer to inform public and stakeholders.
- Assist in establishing and implementing communication requirements such as holding press conferences, disseminating press releases, and answering media queries.
- Attend command meetings to exchange information with the IC/UC and to get approval of information to be released.
- Ensure that the response organization is kept informed on the overall response efforts.
- Coordinate media activities with the Command and General Staff (especially the Operations Section Chief).
- Determine need to develop an Outreach Plan.

Safety Officer

Desired Attributes: Understands regulations, risk management skills, and technical expertise.

Primary Responsibilities:

- Work with the Operations Section Chief to identify and mitigate safety hazards associated with planned strategies and tactics.
- Participate in the planning process.
- Identify hazardous situations associated with the incident.
- Participate in the development of the IAP.
- Exercise authority to stop or prevent unsafe tactics.
- Investigate accidents and injuries that have occurred in the incident areas.
- Develop appropriate safety plans for the response.
- Monitor compliance with safety requirements.

For more information on the ICS, please see the Federal Emergency Management Agency (FEMA) Web site: <https://www.fema.gov/national-incident-management-system>.