

A MANUAL FOR CITIZEN SCIENTISTS
STARTING OR PARTICIPATING IN
DATA COLLECTION AND
ENVIRONMENTAL MONITORING
PROJECTS



Harvard Law School
**Emmett Environmental
Law & Policy Clinic**

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Preliminary Information

This manual is a project of the Emmett Environmental Law & Policy Clinic at Harvard Law School under the direction of Clinical Professor Wendy B. Jacobs. This manual was researched and prepared by Clinic students, including Curtis Powell ('18) and Phillip Godfrey ('17), together with the Clinic's lawyers Wendy Jacobs, Shaun Goho, and Aladdine Joroff. Additional Clinic students, in particular Laura Bloomer ('19), Nolan Brickwood ('20), Elizabeth Carr ('20), Joseph Cherney ('20), Amy Chyao ('19), Gabriel Doble ('20), Erik Federman ('18), Samuel Feigenbaum ('20), Sara Fitzpatrick ('20), Alexander Kontopoulos ('20), Esther Labrado ('17), Ellen Park ('17), Hannah Perls ('20), Dylan Redor ('20), Gloria Scott ('17), Michael Shafer ('19) Michael Soressi ('20), Francis Sturges ('20), Harish Vemuri ('20), and Basil Williams ('19), performed research and helped prepare the appendices to this manual. Lynne Dzubow, the Clinic's Legal Fellow, assisted in research, compiling updates, and editing the manual for this latest edition. Supplements to this manual are titled "Public Rights to Information about Chemical Storage and Releases" and "Using Citizen Science Data in Litigation." Questions or comments can be directed to EmmetClinic@lists.law.harvard.edu.

Second Edition

The second edition of the manual is updated to reflect changes in the law and new trends in areas of potential legal liability. The manual is current up to February 2019.

Legal Disclaimer

The manual is not intended to operate as a substitute for legal representation and does not create an attorney-client relationship. This manual generally describes the legal framework within which citizen collection of data and environmental monitoring may occur. It identifies legal issues citizens should be aware of and offers general suggestions. However, if you have specific questions or you encounter legal threats in the course of conducting a citizen science project, you should consult a lawyer with expertise in the geographic locale in which you are working. Please understand that laws vary from state to state and from locale to locale. Laws also frequently change so it is important to educate yourself about the current laws in the area in which you plan to work. This manual will help get you started. Neither the Clinic nor any of the authors assumes any liability for the actions taken (or not taken) by any party in reliance on this manual.

Glossary of Terms

Decision Maker: A person or entity with jurisdiction to make legal decisions or judgments.

Environmental Protection Agency (“EPA”): The federal agency created by Congress to protect human health, natural resources, and the environment from pollution, to set limits for the emission of pollutants, and to enforce those limits. Most states have their own state-created agency empowered to do the same within that state.

Information Collection: The gathering and analysis of information that is already publicly available.

Information Generation: The procurement of information that was previously uncollected, unknown, unreported, or unestablished in the realm of public knowledge.

Information Use: The ways in which information that is collected or generated during a citizen science project can be used.

Jurisdiction: The legal authority to make legal decisions or judgments. It could be a local, state, or federal administrative agency, legislative body, or court.

Pollutant Source: An industrial facility, agricultural facility, land fill, sewage treatment plant, coal mine, etc.

Project Approach: An early design of a project comprised of two components: (i) the identification of a **site** (*i.e.*, location) of interest to you and (ii) the determination of which pollutant or combination of pollutants are of concern to you and about which you will collect information and data.

Project Focus: The environmental question, theme and/or problem to which a project is directed.

Quality Assurance Protection Plan (“QAPP”): A formal document that describes how a project will achieve its information quality requirements.

Quality Standards: Standards that serve to establish a level of quality that information must meet before it can be used in a court proceeding or in an agency action.

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INTRODUCTION

Purpose of this Manual: This manual aims to empower individuals in their roles as citizen scientists and to promote the practice of community-based citizen science as a vehicle for environmental justice. It is our hope that this manual will increase your awareness of how to identify and contribute to existing projects or to initiate and effectively prove your own project. To that end, this manual outlines practical suggestions for how to design and carry out a citizen science project. It also contains an overview of relevant laws and regulations, as well as technical suggestions regarding data collection, analysis, and compliance with relevant scientific and **quality standards**.

What is Citizen Science?

Citizen science can be defined as a grassroots initiative in which ordinary citizens, sometimes in collaboration with professional scientists, organizations and government agencies, collect, generate, and distribute information either for educational purposes or to address community-centered environmental issues. More simply, it is community-driven science: science engaged in, by, and for the non-scientist populace.

There are multiple ways that individuals can get involved in citizen science projects, and these projects can take on a variety of configurations. For example, individuals may choose to *find and collaborate on pre-existing projects* rather than start their own. Existing projects are often offered by professional citizen science organizations, neighborhood organizations, environmental agencies, and local park and wildlife services. Most existing projects have a specific, and often unique, focus that is set by the organization or agency conducting the project. For instance, a project may be designed to assist with the collection or generation of information needed to support the work of a decision-maker or advocate or to motivate individuals to engage with nature and science.

Citizen science is community-driven science: science engaged in, by, and for the non-scientist populace.

The EPA has defined environmental justice as “the fair treatment and meaningful involvement of all people . . . with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

Alternatively, individuals may *design and initiate their own project*, either for similar goals or with an eye toward regulatory or private enforcement of environmental laws. Individuals may start by identifying an issue in their communities (*e.g.*, groundwater pollution, lead contamination, high asthma rates), and then develop a plan to collect and analyze samples near potential sources of the problem. They might then use these results to educate community members and decision-makers, including by submitting the results of their work to a regulatory agency (*e.g.*, the local board of health or the state or federal **Environmental Protection Agency (“EPA”)**) to petition the agency to take action necessary to protect the community (*e.g.*, enforcement against a polluter).

In short, citizen science projects are and can be organized for many different purposes and with many opportunities for varying levels of involvement. Recognizing the many forms citizen science projects may take, this manual generally focuses on those projects designed to remediate environmental problems that threaten community health and wellbeing.

Example of Citizen Scientists in Action: In 2004, residents of Tonawanda, New York, home to some of the state’s largest industrial manufacturing facilities, noticed a marked decrease in local air quality and an increase in chronic health problems and banded together to form the Clean Air Coalition of Western New York. They collected local air samples using simple air sensors readily available online, and their analysis of these samples revealed the presence of high levels of benzene, a known carcinogen, in the town’s air. The residents then presented this information to New York’s Department of Environmental Conservation, which worked with the federal Environmental Protection Agency to perform further air quality tests. Once the state and federal agencies became involved, the local manufacturing facilities tightened operating procedures, ultimately decreasing benzene levels in the air by 86 percent.

Many successful citizen science projects tend to follow the process demonstrated by this example. A community of citizens comes together through grassroots organizing to identify and solve a problem through the collection or generation of information. They then leverage this information to gain traction with the relevant enforcement agencies and put pressure on the polluting parties to reform.

Technical and Legal Limitations of this Manual

This manual describes the legal and technical framework governing citizen science and offers practical suggestions. These suggestions are general and not specific to your locale. Nor are these suggestions comprehensive. It is important that you check the current rules in the specific **jurisdiction** in which you will carry out or are currently carrying out your project. This manual provides references to resources for those seeking more information. However, these resources are non-exhaustive and are subject to change.

Concerning legal suggestions: Many of the laws referred to in this manual are administered and regulated at the state and local levels, with potentially significant differences across **jurisdictions**. This manual does not attempt to compile and detail every state statute, local ordinance, or agency regulation that may be relevant to a citizen scientist's efforts. Instead, the manual is intended to give a broad overview of the relevant laws by distilling governing principles and common statutory elements across **jurisdictions**. Having canvassed these laws generally, the manual identifies types of laws that restrict citizen science – meaning laws that could result in a citizen scientist facing either criminal or civil liability for actions (such as trespass) not conducted in compliance with such law. It is important that you seek to educate yourself about statutes, regulations, and ordinances specific to your own **jurisdiction** before setting off into the field to engage in sample collection. The tools available in this guide will assist you in doing so.

Concerning technical suggestions: The problems addressed by citizen science projects are diverse.¹ This manual is primarily focused on citizen science projects that are directed at environmental pollution concerns, and in particular, pollution of air, water, and soil. However, many of the suggestions in this manual are highly generalizable. If your

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This manual is primarily focused on citizen science projects that are directed at pollution concerns, and in particular, the environmental pollution of air, water, and soil.

¹ See, e.g., ANNE BOWSER & LEA SHANLEY, NEW VISIONS IN CITIZEN SCIENCE (Woodrow Wilson International Center for Scholars, 2013), <https://www.wilsoncenter.org/sites/default/files/NewVisionsInCitizenScience.pdf>.

project lies outside the focus of the manual, we recommend that you use the chapter headings and introductions to rapidly assess whether the content of the chapter will be relevant to your particular project.

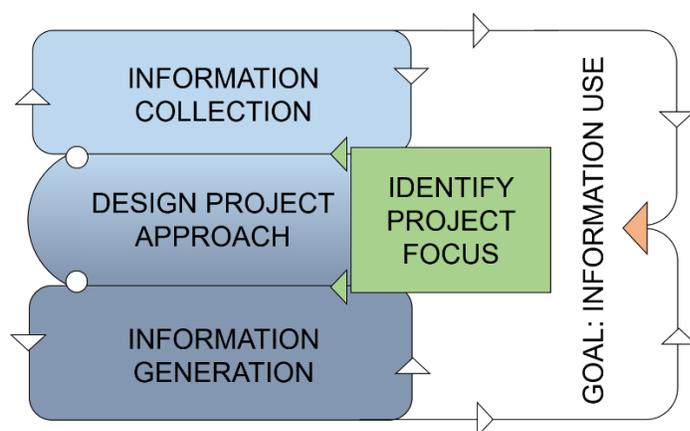
Manual Overview

This manual is divided into seven major chapters. The needs of individual citizen scientists can differ greatly, and therefore, there are various ways in which the content of this manual might be presented. We have chosen to structure the manual to reflect the sequence of steps that one might follow when initiating a new citizen science project. But, we emphasize that no two projects will follow the exact same path from beginning to end.

The manual is organized to reflect the sequence of steps one might follow when initiating a new citizen science project.

The following graphic provides a visual representation of how the different chapters relate. This graphic highlights: (i) that there are many paths that can be taken from the beginning of a project (“**Identify Project Focus**”) to completion of that project (“**Goal: Information Use**”); (ii) that the chapters of this manual are highly interrelated and need not be thought of as separate steps; and (iii) that many times citizen science projects are iterative: they may involve some cycling back to previous steps as new information is uncovered or if circumstances change.

No two projects will follow the exact same path from beginning to end.



Graphic Legend:

Each chapter of this manual relates to one or more of the major categories outlined in this graphic. Areas of the graphic will be expanded in each chapter to highlight information that may be of use to you as you carry out your project.

[Chapter 1](#), “Identifying Your Project’s Focus and Designing Its Approach,” describes the initial steps of a citizen science project. This includes guidance on how the focus of your project, or the central environmental issue to which it is directed, should influence your project’s approach.

[Chapter 2](#), “Identifying Your Project’s Goals – Evaluating Potential Information Uses,” assists you in brainstorming the potential goals of your efforts before engaging in **information collection** or field research. For example: Do you intend to give your data to a regulatory agency for use in an enforcement action? Does that agency have the resources and political will to pursue such an enforcement action? Are there other uses for your data that do not involve an agency enforcement action (*e.g.*, community organizing, media attention)? Your answers to these questions can shape the scope and direction for your project.

[Chapter 3](#), “**Information Collection: Gathering Publicly Available Information**,” assists you in identifying what is already known about the problem with which you are concerned. Specifically, it provides guidance on how to acquire publicly available information with respect to pollutants and **pollutant sources**. After reading this chapter, you should know how to efficiently gather publicly available information and to determine whether or not it is sufficient to resolve the problem you have identified.

[Chapter 4](#), “Information Generation: Potential Liability,” reviews potential legal limitations on **information generation** by citizen scientists as well as positive rights and privileges you can take advantage of to design the most effective project possible. Think of this as a primer on which laws might be most relevant to citizen science. While we anticipate that most readers will not encounter legal complications in conducting their projects, we nonetheless want to arm you with the knowledge and resources to carry out your project without fear of adverse consequences. To that end, this chapter summarizes a wide range of legal issues like trespass, drone use, and privacy rights. The analysis surveys the laws of all 50 states as well as Puerto Rico, highlighting similarities and differences across **jurisdictions**. This chapter should be read in conjunction with the material in Appendices [1](#) and [2](#) of this manual, which compile specific state statutes and resources. Ultimately, this chapter will help you *begin* to develop a sense of which actions you can take and which you should avoid, allowing you to plan your project more effectively.

Appendices include:

1. *High-level comparisons of state laws*
2. *Individual State Law Summaries*
3. *Pollutants Monitored by the EPA*
4. *Publicly available Data and Permits*
5. *EPA Reference Methods, Standards and Protocols*

[Chapter 5](#), “Information Generation: Design of Sample Collection, Sample Analysis, and Data Interpretation Methodologies,” highlights ways of increasing the quality of new information that you generate from any field work that your project may involve. Importantly, increasing the quality of the information you generate promotes its utility or usefulness. This chapter also stresses the value of making this process a community endeavor. For example, look for experts in your community who can help you overcome any technical hurdles you may encounter.

Finally, [Chapter 6](#), “Information Use: Making the Most Out of Your Information,” provides a few examples of ways in which you can increase the value of the work that you have performed.

Use of This Manual

Citizen scientists have diverse needs that depend on the nature and status of the projects in which they are involved. As such, we anticipate that readers will differ in how they will use this manual. Some may read the manual from cover to cover; others will seek out specific topics.

While most of the examples and discussion provided in each chapter of this manual are geared toward helping citizen scientists begin and complete their own projects, the suggestions are applicable to all citizen science projects that are directed at air, water, and soil pollution concerns. Thus, whether you are interested in finding and getting involved in an existing project or are already involved in an ongoing project, this manual can still be a valuable resource to you.

Below are examples of how readers may use this manual:

- Individuals interested in initiating a citizen science project: because the manual is structured to reflect the sequence of steps that one might follow when initiating a new citizen science project, these readers may benefit from reading the manual from cover to cover.
- Volunteers who are seeking to join an ongoing citizen science project: because [Chapter 1](#), “Identifying Your Project’s Focus and Designing Its Approach,” includes a section with resources for those interested in joining an ongoing project, people looking for a project to join may benefit from starting with this chapter. After joining a project, these readers can explore the chapters of the manual that are most relevant to their specific project roles.

There is not a “correct” way to use this manual. Depending on your project’s needs and status, and your type of involvement, you may choose to read the text in full, focus on the chapters that you anticipate will be most relevant, or dig deeper into the references cited in the text or into the appendices.

- Organizers, Project Managers and Volunteers who are currently engaged in a citizen science project: for these readers, the manual's most useful content will likely relate to the project roles in which they are involved (*e.g.*, project design, collecting samples, analyzing available data, interpreting results, preparing forms, disseminating a project's results, etc.). These readers may refer to the table of contents and to the chapter headings and introductions to identify sections of the manual containing content that addresses their current project needs.

This manual is designed to be useful for readers with a broad range of technical and legal backgrounds. Those who are just starting to learn about these topics may find it most useful to focus on the complete text of the chapters. Readers who are more familiar with the issues, and those who possess a technical or legal background may prefer to spend more time investigating the references cited in the text and appendices.

Problem Solving as You Read: Some readers may not have a specific problem in mind as they review the contents of this manual. Because reading the manual with a specific problem in mind may help highlight the relevance and application of the topics discussed, the following are hypothetical scenarios that you could consider when reading the manual:

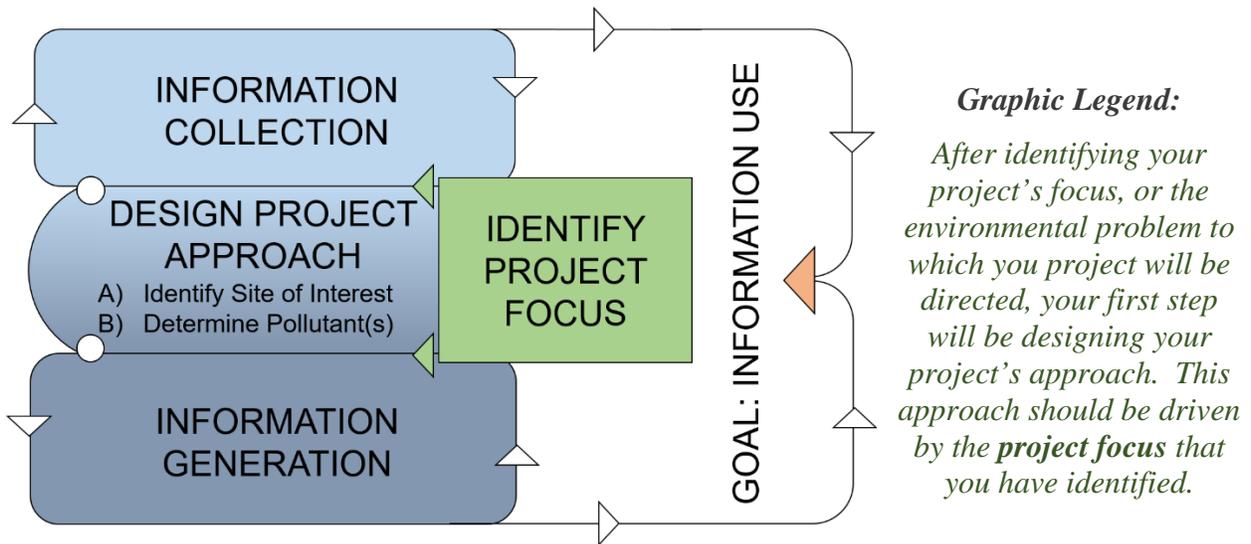
First scenario: Imagine that you have just retired and moved to Wyoming for the clean air and fresh water. You bought a home on a hill overlooking and within a short distance of a river. You are hankering for something to do in retirement and decide to become an observer of nature and the environment. You soon learn that there are a couple of ranches near the area in which you have settled. How would you initiate a project to monitor any potential pollution of the river associated with ranching activities?

Second scenario: Imagine that you live in a small Pennsylvania community. Many individuals in your community are suffering from headaches and skin rashes, and they are complaining that their tap and well water is discolored with a bad odor. With a little investigation, you discover that some members of the community have recently leased their land to a gas company but cannot discuss the situation because of confidentiality provisions in their leases; others have not leased their land or given the gas company any rights to access or use their property. How would you design a project to determine whether there are pollutants in the water that are causing health impacts? Suppose that the successful completion of your project will require the comparison of water pollution levels that existed prior to the arrival of the gas company (*i.e.*, baseline pollution levels) with levels after its arrival?

Third scenario: Imagine that you live in North Dakota and that you are worried that a recently constructed pipeline will leak oil into a lake that is the source of many important resources for the residents in the area, not the least of which is drinking water. How would you initiate a project that will allow you to detect a leak in the pipeline?

CHAPTER 1: IDENTIFYING YOUR PROJECT'S FOCUS AND DESIGNING ITS APPROACH

Why You Should Read this Chapter: Starting your project in the right way will help assure your overall satisfaction with your project. This chapter provides guidance for those taking these beginning steps. By the end of it, you will know how to identify your **project's focus** and how to use that focus to design your **project's approach**, which includes (i) the identification of a **site** (*i.e.*, location) of interest to you (*e.g.*, a river, forest, industrial activity) and (ii) the determination of which pollutant or combination of pollutants will be examined during your project. In addition, this chapter provides resources for those seeking to join an ongoing citizen science project.



Identifying the Focus of a Project of Interest

Before beginning a new citizen science project, you should identify the **project focus**, which is the environmental question, theme, and/or problem at issue. Some who are reading this manual may already have a **project focus** in mind; others may not. Recognizing the vast breadth of environmental problems that may be of interest to citizen scientists, we do not attempt to list them all here. Instead, we mention a few types of projects and examples of each.

Monitoring the condition of an environmental interest – Your project's focus might relate to protecting an environmental resource or habitat that is currently unthreatened or thought to be

unthreatened. By monitoring this resource, your efforts may facilitate the rapid detection of changes in pollution levels. Examples include:

- Monitoring water pollution levels in a river or in a national forest.
- Monitoring air quality in your community following the construction of a new local **pollutant source** (e.g., an industrial facility, agricultural facility, land fill, sewage treatment plant, coal mine, etc.) or an announcement that an existing **pollutant source** in your community will be expanding or increasing its activity levels.
- Monitoring water quality in your community because you suspect an increase in pollution resulting from accumulated wear and tear of a known **pollutant source** near your home.

Verifying reported emissions of pollution from a known pollutant source – Your project’s focus might relate to verifying that a known **pollutant source** is accurately reporting its environmental footprint. For example:

- Verifying that a known **pollutant source** is accurately reporting how much or what it pollutes.
- Verifying that a known **pollutant source** is complying with its current permit obligations.

Redressing a known environmental pollution problem – Your project’s focus might relate to correcting a known pollution problem. Examples include:

- Identifying the source of an environmental pollutant.
- Redressing poor air or water quality.
- Decreasing the environmental impact of an oil spill in a national or state forest or in a body of water.

Diagnosing a problem that you suspect is caused by pollution – Your project’s focus might relate to solving a problem that has arisen in your community when the cause of the problem is uncertain. You might desire to determine whether the problem’s cause relates to a pollutant present in your community. For example:

- Diagnosing unexplainable health problems that individuals, animals, or plants in your community are suffering.

*Determine Whether Existing Projects Are Already Directed at the **Project Focus** that You Have Identified*

The **project focus** that you are interested in may already be the focus of an ongoing citizen science project. If so, you might consider supporting that project instead of initiating one of your own. Indeed, supporting an existing project can alleviate the burden that some individual citizen scientists may feel in planning and mobilizing their own projects. If your interests align with those of an ongoing project, supporting that project can be ideal for you.

There are a variety of resources to help citizens identify ongoing citizen science efforts:

- **Media Outlets:** Local news agencies often cover major ongoing citizen science projects. Moreover, many community-driven citizen science projects increase public awareness through social media. For example, details concerning the citizen science project in Tonawanda, New York were reported in local news. In addition, the project's task force, the Clean Air Coalition of Western New York, used a Facebook page to advertise public meetings and other ways of getting involved in the project.
- **Organizational Websites:** Various citizen science organizations host websites that consolidate ongoing citizen science projects. Examples include the Citizen Science Alliance (<https://www.citizensciencealliance.org/>), the government-sponsored <https://www.citizenscience.gov>, iNaturalist (<https://www.inaturalist.org/>), SciStarter (<https://scistarter.com/finder>), and Zooniverse (<https://www.zooniverse.org/>).
- **Agency Websites:** State and federal environmental agencies also maintain citizen science databases on their websites. The EPA, for example, hosts a robust page dedicated to promoting citizen science involvement at <https://www.epa.gov/citizen-science>. In addition, many state and local park and wildlife departments host links to ongoing citizen science projects.
- **Appendices:** Appendices [1](#) and [2](#) of this manual provide references to various projects that are open to public involvement.

Initiating Your Own Project: Designing Your Project's Approach

Many important environmental problems are not addressed by existing citizen science projects. Projects sponsored by government agencies may be limited and constrained by budget

cuts, changes in priorities, and changes in political administrations. Ultimately, you may seek to initiate your own project.

The first step in initiating your own citizen science project is designing your project's approach. A “**project approach**” has two components: i) the identification of a **site** of interest to you and ii) the determination of which pollutant or combination of pollutants you will examine. Importantly, the design of your project's approach should be driven by the **project focus** that you identified previously (see [the first section of this chapter](#)). For example, suppose that your **project focus** is:

- Verifying that a known **pollutant source** is accurately reporting how much or what it emits to the environment. This project's **site** of interest might be the known **pollutant source**.
- Improving the quality of air or water in your community. Here, the project's **site** of focus might be your community itself or a known **pollutant source** located near your community.
- Monitoring a natural habitat that you consider valuable (*e.g.*, a river, forest, ocean, etc.). In this instance, the **site** of interest might be the natural habitat or a known **pollutant source** located near that habitat.

After you have identified your project's **site** of interest, you should determine which pollutant or combination of pollutants will be examined during your project. This aspect of your project's approach is critical because if you spend all of your time examining the wrong pollutant, your project's goal will not be met. For some projects, determining which pollutant or combination of pollutants to examine will be a straightforward process. In others, this process may be the most difficult aspect of your project's design.

Use what you know about your project's **site** of interest to guide you in determining which pollutant or combination of pollutants you will examine during your project (see [Chapter 3](#)). For example:

- **Source Indicators:** **Pollutant sources** are often associated with strong source indicators—meaning that some pollutants are commonly produced by a certain kind of **pollutant source**. Suppose for instance that your project's goal is to measure the impact of a newly constructed facility that produces plastics. These facilities are known to emit volatile organic compounds (“VOCs”). Therefore, your project may seek to examine VOC emissions. If you are interested in monitoring water quality in a stream, you could research

sources of water pollution flanking the stream to determine which pollutants they discharge and, therefore, which you should examine.

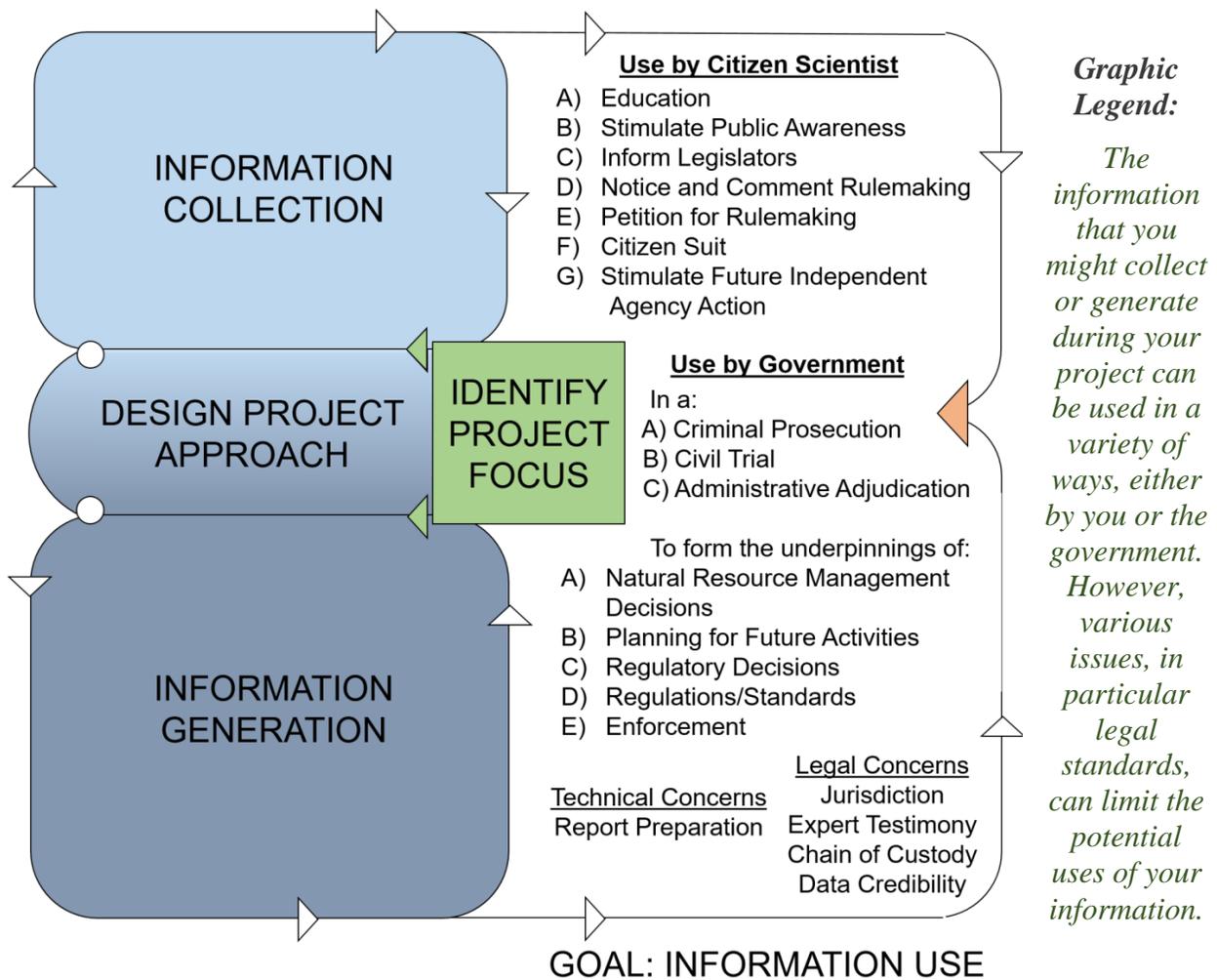
- Use Your Senses: Your eyes, ears, and nose can help you figure out which pollutants you should examine (*e.g.*, a distinct smell in the air, the sight of an oil slick on the surface of water, a distinct taste in your drinking water, etc.). Likewise, the health symptoms associated with exposure to a pollutant may prove insightful. For example, the pollutant benzene, which is associated with petroleum products, has a sweet smell and exposure to abnormal levels of benzene in ambient air is associated with a heightened risk of asthma. If you notice a correlation between these two things in your community—for example, a gasoline-like smell and an increase in asthma diagnoses—you might then consider initiating a citizen science project focused on local sources of benzene pollution.
- Media Outlets: Local news reports may also provide valuable information. For example, if a local news agency reports that residents of your community have been suffering from exposure to lead, the approach of your project may be determining the lead content of your drinking water.
- Smartphone Apps: Some regions may have smartphone applications set up to report pollutants or evidence thereof. For instance, Pittsburghers can use Smell PGH to report air quality on their smartphone; the app can then alert the Allegheny County Health Department to the data.² Apps such as this may provide useful information as you begin to decide which pollutants require attention in your area.
- Government Records & Databases: Government records and databases, especially those created and maintained by the federal and state agencies responsible for regulating the **pollutant source** in question, may provide valuable information for determining which pollutants are present in your community and a cause for concern. For example, EPA provides access to a number of environmental databases through its [Envirofacts website](#). The agency also makes available online information about specific **pollutant sources** through its [Enforcement and Compliance History Online \(“ECHO”\)](#) and [Toxic Release Inventory \(“TRI”\) Program](#) websites.

² Ashley Murray, *Carnegie Mellon Scientists Use App to Track Foul Odors in Pittsburgh*, PITTSBURGH POST-GAZETTE (July 3, 2017), <https://www.post-gazette.com/business/tech-news/2017/07/03/smell-pgh-app-carnegie-mellon-university-cmu-create-lab-foul-smell-pittsburgh/stories/201706300430>.

We conclude this chapter by emphasizing that your project's approach need not be static; it is possible that it will require modification as your project progresses. For example, suppose that the focus of your project is diagnosing the sudden and unexplainable health problems recently afflicting members of your community. Your original **project approach** may have involved determining the levels of pollutant X in the community's water supply, but the results of your examination could indicate that the pollutant is absent or within safe levels. In response, you should revisit and modify the design of your project's approach (*e.g.*, modify it so that you will determine the levels of pollutant Y in the water supply, the levels of pollutant X in the air, or otherwise).

CHAPTER 2: IDENTIFYING YOUR PROJECT'S GOAL

Why You Should Read this Chapter: If you don't know where you want to end up, you will never get there. Thus, it is important to identify your project's goals early. This process involves the evaluation of potential uses of the information that you collect or generate as you carry out your project (*i.e.*, **information use**). Here, we outline examples of **information use** and, at the same time, explain the **quality standards** that can limit the use of information that is collected or generated by citizen scientists. Understanding this information will help assure that your project's goals are achieved.



Introduction

The use of citizen science-generated information is subject to various legal standards regarding its credibility and reliability, which we refer to generally as “**quality standards**”.³ These standards serve to establish a level of quality that the information must meet before it can be used in a certain way (for example, in a court proceeding or agency decision). The terms “credible information” or “reliable information” may be used in some places to refer to information of a sufficiently high quality to be used for the desired purpose.

Two simple inquiries can help you identify the **quality standards** that are relevant to your project’s ultimate goals. First, who will use the information? Potentially, you seek to use the information yourself. Alternatively, you may want the government to use the information (*e.g.*, use by a federal, state, or local governmental agency, etc.). Second, how will the identified user ultimately use the information?

Making Connections Between Chapters: [Chapter 1](#) was directed at helping you take the first steps of your project. Now that you have established your project’s beginnings, you should take time to consider its possible endings. This involves an examination of the potential uses of the information that might be collected or generated during your project’s progression (*i.e.*, “**information use**”).

This chapter highlights examples of **information use**. Along the way, we identify legal standards that can limit the use of information that is collected or generated by citizen scientists. Doing so will help reveal the path that you should take to achieve your project’s goals.

It may also be useful for you at this point to note that **information collection** is the topic of [Chapter 3](#), and that **information generation** is the topic of [Chapter 4](#) and [Chapter 5](#).

³ We emphasize that this chapter is only introductory in nature. Additional background information can be found in Appendices [1](#) and [2](#) of this manual and in a report published by the Commons Lab of the Science and Technology Innovation Program. See JAMES MCÉLFISH, JOHN PANDERGRASS & TALIA FOX, CLEARING THE PATH: CITIZEN SCIENCE AND PUBLIC DECISION MAKING IN THE UNITED STATES (Apr. 2016), <https://www.eli.org/research-report/clearing-path-citizen-science-and-public-decision-making-united-states>.

You can use the information that you collect or generate during your project in many ways. Depending on how you want to use the information, it will be subject to different **quality standards**, which can range from lenient to strict. While the laws and regulations that establish **quality standards** are too varied to allow a strict differentiation into “lenient” and “strict” categories, we attempt below to indicate where different standards fall along this continuum. It should be stressed at the onset of this discussion that even when use of information is not formally limited by **quality standards** or when it is limited only by lenient **quality standards**, the information’s quality still impacts how effective it will be in advancing your goals.

Some potential uses of information that you have collected or generated are not subject to legally imposed **quality standards**. For example, you may use the information to increase knowledge in educational campaigns, to stimulate public awareness, or to foster community engagement. Or you might want to contact your elected representatives to influence the development of new laws. You can provide them with the information that you have collected or generated by phone, email, letter, or otherwise. Although there are no legal rules governing the quality of the data used for these uses, you obviously still want to ensure that it is of as high a quality as possible so that you can make a compelling argument.

- Uses by Citizen
Scientist*
*No Legally Imposed
Quality Standards*
- 1) Education*
 - 2) Stimulate Public Awareness*
 - 3) Inform Legislators*

You might instead want to provide the information to a regulatory agency or use it as evidence in a court case such as a citizen suit against a polluter. In these situations, the use of the information, either by yourself or by a government agency, will be subject to legally-imposed **quality standards**.

You can provide information to regulators in a variety of contexts. First, you can provide an agency with the information that you have collected or generated to influence the development of new regulations. For example, when an agency uses notice and comment rulemaking to propose the adoption of a new regulation, members of the public can submit comments in response to the proposed regulation during an allotted window of time. After closure of this time window, comments are no longer accepted. At the federal level, opportunities for public comment during notice and comment rulemaking are generally published in the Federal Register or can be found

on the agency’s website.⁴ Each year, the EPA receives millions of comments on its proposed rules, notices, and other actions which are posted on its dockets at regulations.gov.⁵

If an agency is going to rely on the information you have submitted as a basis for its eventual decision, then the information must satisfy certain **quality standards**. Federal and state agency decisions are subject to judicial review. For example, the Administrative Procedure Act (“APA”) directs courts that review federal agency actions to “hold unlawful and set aside agency action, findings, and conclusions found to be *arbitrary, capricious*, an abuse of discretion, or otherwise not in accordance with law” or “unsupported by *substantial* evidence.”⁶ Standards in state courts are similar. Although these standards are not particularly burdensome, because courts grant considerable deference to agencies’ scientific expertise, they nevertheless provide a check on the quality of the information that forms the basis for agency decisions.

If an agency does not have an ongoing rulemaking proceeding to which your information is relevant and if you believe an agency should issue new or revised rules to address the situation, then petitions for rulemaking provide an additional opportunity for you to use the information that you have collected or generated. Indeed, the APA requires each federal agency to provide “an interested person the right to petition for the issuance, amendment, or repeal of a rule.”⁷ Federal agencies have implemented different processes for the submission of petitions. The EPA, for example, provides opportunities for the public to submit and view previously submitted petitions on its website.⁸ Similar opportunities for public engagement to influence the development of new regulations exist at the state level.

You might also submit the information to agency in the hope that the agency will use it to bring an administrative or judicial enforcement action against someone who is violating the law. For example, a government may use the information as evidence in a civil lawsuit or a criminal prosecution in a federal or state court. In these instances, the **quality standards** discussed below

⁴ For a comprehensive source compiling pending agency actions available for public input, see REGULATIONS.GOV, <https://www.regulations.gov/> (last visited Feb. 7, 2019).

⁵ Additional information can be found on EPA’s website. See EPA Docket Center, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/dockets> (last visited Feb. 7, 2019).

⁶ 5 U.S.C. § 706 (emphasis added).

⁷ 5 U.S.C. § 553(e).

⁸ See *Petitions for Rulemaking*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/aboutepa/petitions-rulemaking> (last visited Feb. 7, 2019).

concerning use of the information in a citizen suit would apply. Alternatively, a state or federal agency may use the information in an administrative adjudication. The hearing officer in an administrative adjudication will follow **quality standards** that are similar to those in federal and state courts, though generally somewhat more flexible and lenient. For example, at the federal level, the APA indicates that “any oral or documentary evidence may be received, but the agency as a matter of policy shall provide for the exclusion of irrelevant, immaterial, or unduly repetitious evidence.”⁹ At the state level, the Revised Model State Administrative Procedure Act (“MSAPA”) provides similar guidance;¹⁰ not all states, however, have adopted this model statute.

Finally, you may use the information that you have collected or generated to stimulate future independent agency action. In these instances, the information serves *to call an agency’s attention to the problem*. The agency may then *independently act to verify* the information through its own **information generation** procedures and may initiate enforcement proceedings.¹¹ Some federal regulations expressly require states to solicit public participation in the collection of information and require state agencies to comment on citizen-generated information. For example, an EPA regulation requires states that implement the Clean Water Act (“CWA”), the Resource Conservation and Recovery Act (“RCRA”), and the Safe Drinking Water Act (“SDWA”) to “provide for, encourage, and assist the participation of the public.”¹² With respect to the CWA, EPA regulations require each state that is developing and updating its list of impaired waters to “assemble and evaluate all existing and readily available water quality-related data and information.”¹³ Moreover, the CWA regulations specify that state agencies should actively solicit the help of members of the public “for research they may be conducting or reporting.”¹⁴ EPA regulations also specify that “[e]ach agency administering a permit program shall develop internal procedures for receiving evidence submitted by citizens about permit violations and ensuring that it is properly considered. Public effort in reporting violations shall be encouraged, and the agency shall make available information on reporting procedures. The agency shall investigate alleged

⁹ 5 U.S.C. § 556(d).

¹⁰ M.S.A.P.A. § 404.

¹¹ For example, Tonawanda, NY is a success story on this front.

¹² 40 C.F.R. § 25.3(a).

¹³ 40 C.F.R. § 130.7(b)(5).

¹⁴ *Id.* § 130.7(b)(5)(iii).

violations promptly.”¹⁵ Some state statutes also require state agencies to actively investigate complaints made by citizens concerning violations of environmental laws (see [Appendix 2](#)).¹⁶

State and federal laws also provide standards that may limit agency use of some types of information in all kinds of administrative actions. For example, the Information Quality Act (also known as the Data Quality Act) directs the Office of Management and Budget (“OMB”) to adopt guidelines for federal agencies to address the goals of ensuring and maximizing the “quality, objectivity, utility, and integrity of information.”¹⁷ Among other ways of promoting these goals, OMB guidelines direct federal agencies to develop a process for reviewing the quality of information before it is disseminated by the agency.¹⁸ In a second example, the Endangered Species Act (“ESA”) requires federal agencies to make species listing determinations (e.g., as threatened or endangered) “solely on the basis of the best scientific and commercial data available.”¹⁹

At the federal level, EPA’s “Information Quality Guidelines” limit the agency’s uses of “existing data and information generated by third parties to inform its decisions.”²⁰ These guidelines require “the quality and scientific soundness of this type of data to be reviewed and documented prior to use.”²¹ These **quality standards** are expounded upon on EPA’s website.²²

¹⁵ 40 C.F.R. § 25.9.

¹⁶ See, e.g., N.J. Admin. Code § 7:7A-22.19; N.Y. Envtl. Conservation Law § 19-0503; Utah Admin. Code § R317-8(1.9); 10 Vt. Stat. Ann. § 8020.

¹⁷ Information Quality Act of 2001, Pub. L. No. 106-554, § 515(a), 114 Stat. 2763 (Dec. 21, 2000), <https://www.govinfo.gov/content/pkg/PLAW-106publ554/pdf/PLAW-106publ554.pdf>.

¹⁸ *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, 67 Fed. Reg. 8,452, 8,460 (2002).

¹⁹ 16 U.S.C. § 1533(b)(1)(A); 50 C.F.R. § 424.11.

²⁰ U.S. ENVIRONMENTAL PROTECTION AGENCY, SCIENTIFIC INTEGRITY POLICY, at 2 n. 2 (2012), https://www.epa.gov/sites/production/files/2014-02/documents/scientific_integrity_policy_2012.pdf [hereinafter, “Scientific Integrity Policy”]; see also U.S. ENVIRONMENTAL PROTECTION AGENCY, GUIDELINES FOR ENSURING AND MAXIMIZING THE QUALITY, OBJECTIVITY, UTILITY, AND INTEGRITY OF INFORMATION DISSEMINATED BY THE ENVIRONMENTAL PROTECTION AGENCY (2002), https://www.epa.gov/sites/production/files/2018-11/documents/epa-info-quality-guidelines_1.pdf. As of February 2019, the EPA continues to refer to these two policy documents. See, e.g., *Policy on EPA Scientific Integrity*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/osa/policy-epa-scientific-integrity> (last visited Feb. 7, 2019).

²¹ Scientific Integrity Policy, *supra* note 20, at 2 n. 2.

²² See *How EPA Manages the Quality of its Environmental Data*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/quality> (last visited Feb. 7, 2019); see also *Quality Specifications for non-EPA Organizations to do business with EPA*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/quality/quality-specifications-non-epa-organizations-do-business-epa> (last visited Feb. 7, 2019).

State agency regulations or guidelines function similarly to the EPA’s Information Quality Guidelines. For example, various state agencies have express authority to consider “credible” information in enforcement actions, administrative actions, or both (*see* [Appendix 2](#)). The definition of “credible” varies between states. In some states, information is credible if its collection conforms (i) to accepted scientific practice; (ii) to federally recognized standards; or (iii) to state-specific protocols. Iowa law provides an example of a relatively stringent quality standard imposed to ensure that the information is credible. To submit water data to the Iowa Department of Natural Resources (“IDNR”), citizen scientists must first submit a “volunteer water quality monitoring plan” for IDNR approval. The plan must include a “statement of intent[,]” the names of all participants, the duration of the monitoring effort, the “[l]ocation and frequency of sample collection[,]” the “[m]ethods of data collection and analysis[,]” and “[r]ecord keeping and data reporting procedures.”²³ In addition to this, citizen-submitted data must be approved before being considered credible.²⁴ To be approved, data must be submitted by a “qualified volunteer” who must request that it be deemed credible at the time of submission.²⁵ “[Q]ualified volunteers must have the training and experience to ensure quality assurance and quality control for the data being produced, or be under direct supervision of a person having such qualifications.”²⁶

You may want to use the information to bring a lawsuit against a polluter yourself.²⁷ One mechanism for such a lawsuit is a citizen suit under one of the federal environmental laws. Citizen suits are lawsuits that are brought by a private citizen (i) against an individual, corporation, or government body for engaging in conduct prohibited by a statute or (ii) against a government body for failing to perform a duty required by law. Various federal environmental statutes, including the CWA, ESA, RCRA, SDWA, the Clean Air Act (“CAA”), the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), and the Emergency Planning and Community Right to Know Act (“EPCRA”), allow private citizens to bring lawsuits against violators.

²³ Iowa Admin. Code 567-61.11(455B).

²⁴ Iowa Admin. Code 567-61.12(455B).

²⁵ *Id.*

²⁶ Iowa Admin. Code 567-60.2(455B).

²⁷ For more in-depth explanation on bringing a lawsuit, *see* Manual Supplement, “Using Citizen Science State in Litigation.”

Various **quality standards** govern citizen lawsuits.²⁸ First, the quality of the information must be sufficient to bring a claim. Federal courts require that an attorney filing a complaint to initiate a lawsuit must certify “that there is (or likely will be) ‘evidentiary support’ for [each] allegation, not that the party will prevail with respect to its contention regarding the fact.”²⁹ Generally, requirements in state courts are comparable (*see* Appendices [1](#) and [2](#)).

Second, when submitting evidence at trial or in support of a motion for summary judgment, you must authenticate that evidence, which requires, among other things, maintaining records establishing the “chain of custody” of the evidence. To satisfy the requirement of authentication in federal courts, “the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.”³⁰ Generally, requirements in state courts are comparable (*see* [Appendix 2](#)). You should also note that if you are relying on government-generated information or monitoring reports that the permittee submits to the government, then the information is self-authenticating.³¹

Finally, **quality standards** specifically serve to limit the introduction of “scientific” evidence in trial. It should be noted that some information that you may collect or generate will not be considered scientific (*e.g.*, a picture of an industrial facility that is discharging a pollutant into surface water). In these instances, layperson testimony is sufficient to introduce the information. However, if the information is deemed scientific (*e.g.*, information generated via an interpretation of a data output from a technical instrument), it must be introduced through expert testimony and is subject to stricter quality requirements. This is because scientific evidence is believed to carry greater weight in the minds of jurors than evidence deemed non-scientific. In federal courts, judges use an approach known as the *Daubert* standard to make a preliminary assessment of the quality of the information. In doing so, federal judges consider whether:

“(a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of

²⁸ There are a variety of requirements that you must satisfy to successfully bring a citizen suit (*e.g.*, sending a notice letter in advance, establishing that the plaintiff has standing to sue, etc.). Here, our primary topic of interest relates only to the quality of the evidence you will use to support a citizen suit.

²⁹ Fed. R. Civ. P. 11, 1993 Amendment Advisory Committee Notes.

³⁰ Fed. R. Evid. 901(a).

³¹ Fed. R. Evid. 902(4).

reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.”³²

While judges in many state courts also use the *Daubert* standard when assessing the quality of scientific evidence, others use different standards, although these are generally similar (*see Appendix 2*). Importantly, under each standard, the method by which data is collected and interpreted impacts whether the information will be allowed in a trial.

A final point is applicable to multiple uses of the property, but only in certain states. Several states explicitly forbid the use of certain illegally-collected information in court or in administrative decision-making (*see Appendix 2*). Of these, Wyoming most directly implicates citizen science: information collected in violation of the state’s data trespass law is not “admissible in any civil, criminal, or administrative proceeding.”³³ Moreover, any information fitting this description that is “in the possession of any government entity . . . shall be expunged from all files and databases, and shall not be considered in determining any agency action.”³⁴ Several other states forbid the use of information illegally collected by drones under some circumstances (*see Appendix 2*).³⁵

³² Fed. R. Evid. 702.

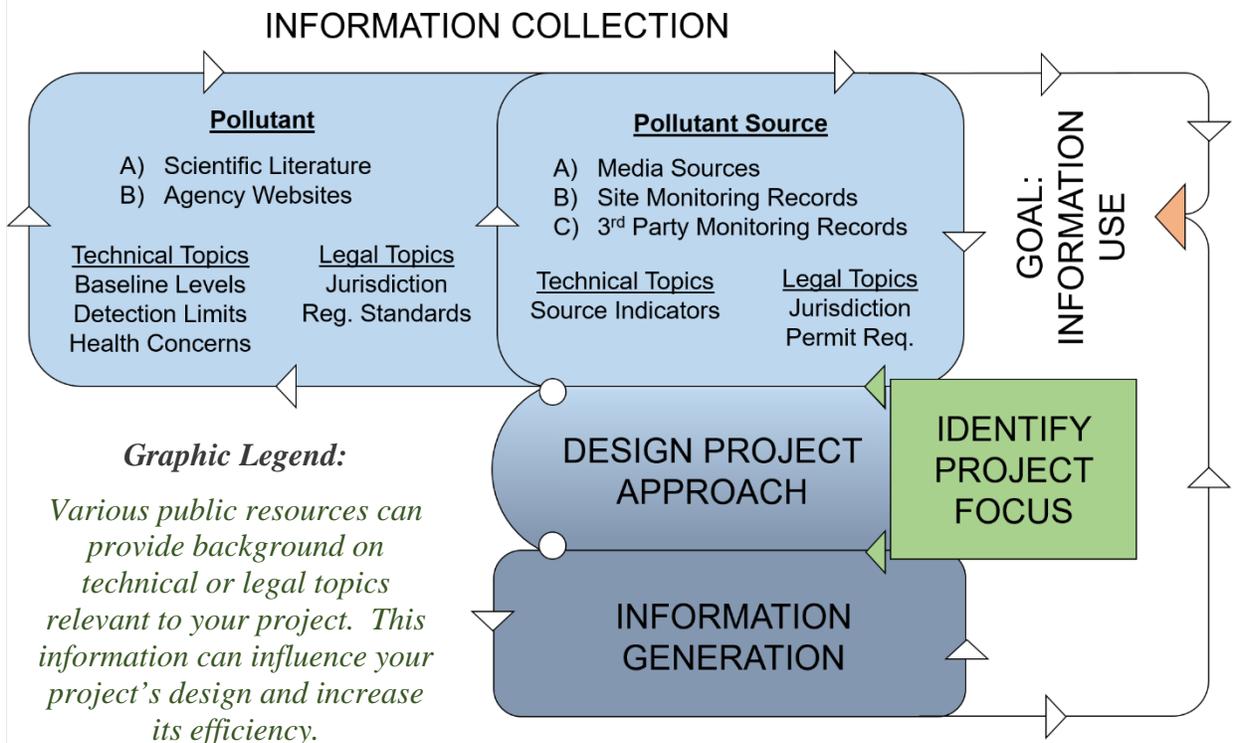
³³ Wyo. Stat. Ann. § 6-3-414(f).

³⁴ *Id.* § 6-3-414(g).

³⁵ At the time of writing, the states with these laws were: Alaska, Alaska Stat. § 18.65.903(a); Florida, Fla. Stat. § 934.50(6); Iowa, Iowa Code § 808.15; Kentucky, Ky. Rev. Stat. § 500.130(8); Montana, Mont. Code Ann. § 46-5-109(1); Nevada, Nev. Rev. Stat. Ann. § 493.112(4); North Carolina, N.C. Gen. Stat. Ann. § 15A-300.1(f); Tennessee, Tenn. Code Ann. § 39-13-905(a)(1); Utah, Utah Code Ann. §§ 72-14-203 & 72-14-204; and Vermont, Vt. Stat. Ann. tit. 20, § 4622(e); *see generally Appendix 2*.

CHAPTER 3: INFORMATION COLLECTION – GATHERING PUBLICLY AVAILABLE INFORMATION

Why You Should Read this Chapter: Every citizen science project has limited resources (e.g., limited time, finances, volunteer involvement, etc.). You will increase the efficiency of your project by taking time to examine information that already exists (i.e., “**information collection**”). This chapter provides suggestions as to what information, if publicly available, might be of use to your project. In particular, this chapter focuses on the collection of information related to pollutants and **pollutant sources**. Resources are provided to aid in your search for this information. Because all citizen science projects *should* involve this type of “**information collection**,” we anticipate that this chapter will be useful to all citizen science projects, whether just beginning or ongoing.



Introduction

Information collection serves various purposes. It informs and directs the design of your project in both technical and legal ways. It also helps assure that your efforts are not redundant, as there may already be useful information in the public domain. It may lead you to other

individuals who are monitoring the problem that you have identified. Here, we provide examples of information that may be worth collecting.

Importantly, if you feel unable to collect this information, we recommend that you seek out expertise in your community. High school teachers, university professors, scientists, engineers, lawyers, and many other individuals in your community are likely willing and able to help.

Making Connections Between Chapters: In [Chapter 1](#), you identified your **project's focus** and used that focus to identify a **site** of interest to you (*e.g.*, a natural resource or a **pollutant source**) and to determine which pollutant or combination of pollutants will be examined during your project. In [Chapter 2](#), you identified how you hope to use the information that you collect or generate during your project and the type of **quality standards** that might apply.

This chapter's focus is "**information collection**," gathering and analyzing information that is already in the public domain. In some instances, the process of **information collection** alone will provide you with the tools you need to meet your goals. However, many projects will need to supplement the process of **information collection** with **information generation**, which is discussed in [Chapter 4](#) and [Chapter 5](#).

Collecting Available Information Concerning a Pollutant

A large amount of information concerning specific pollutants is already available in the public domain. Spending time upfront to research your pollutant(s) of interest will help to assure that you get the most out of your efforts and could also help shield you from potential health risks.

We recommend that you begin your research by addressing the following technical and legal questions:

- Technical Questions Related to Determining the Identity of a Pollutant: Is the pollutant visible, and if so, what does it look like? Can the pollutant be sensed in other ways, such as smell? What health risks are associated with the pollutant? How are potential health risks manifested (*e.g.*, vomiting, dizziness, skin rash, etc.)? What information is available on the pollutant's material safety data sheet ("MSDS") (*e.g.*, health effects, first aid measures, flammability and explosiveness, proper storage and disposal, physical properties, toxicity, and necessary protective equipment)?

- Technical Questions Related to Determining the Source of a Pollutant: What sources are typically associated with the pollutant (*e.g.*, natural sources or human sources such as industrial facilities, landfills, sewage treatment plants, mining operations, etc.)? What is the pollutant’s Chemical Abstracts Service (“CAS”) number (a unique chemical identifier that can help you locate sources of a pollutant and any relevant characteristics)?
- Technical Questions Related to Collecting, Handling, or Storing Samples: What is the stability of the pollutant in the air, water, or soil? Is the pollutant soluble in water? What instruments or methodologies can be used to measure the amount of the pollutant in air, water, or soil? What is the lowest amount of pollutant that is instrumentally or methodologically detectable (*i.e.*, its detection limit)? What are the baseline/background levels of the pollutant (*e.g.*, in some contexts pollutants are ubiquitous, and so detecting a pollution problem involves showing that the level of the pollutant is higher than previously recorded)? What are appropriate safety measures for the handling of the pollutant?
- Legal Questions: Is the pollutant regulated by a federal or state agency (*i.e.*, does a state or federal agency have **jurisdiction** over the pollutant)? If so, what regulations are in place that are specific to the pollutant (*e.g.*, permissible or reportable quantities)?

Various resources exist that can be of aid in answering these or other related questions. Substantial technical and legal information can be found online; however, care should be taken to assure the quality of the references that you rely upon. Generally, peer-reviewed medical or scientific articles are a very good resource to gain technical knowledge; these articles can be found by searching online with Google Scholar (<https://scholar.google.com/>) or in various public databases (*e.g.*, [Web of Science](#), [PubMed](#), [MedlinePlus](#), etc.) that might be available through a public library.

Federal and state agency websites, such as epa.gov, also contain reliable information. For example, the Substance Registry Services (“SRS”) is the EPA’s “central system for information about substances that are tracked or regulated by EPA or other sources. It is the authoritative resource for basic information about chemicals, biological organisms, and other substances of

interest to EPA and its state and tribal partners.”³⁶ The EPA website also provides links to state health and environmental agencies that play a role in monitoring pollutants.³⁷

Finally, federal and state regulations contain information on how pollutants are monitored. These regulations may be very relevant to your project. For example, in many instances regulations will specify pollution quantities, which if exceeded, *must* be reported to a federal or state agency. Various federal regulations that may be relevant to your project are listed in [Appendix 3](#). For many facilities, reporting requirements will also be contained in a permit, a topic discussed in the next section.

Collecting Available Information Concerning a Pollutant Source

A large amount of information concerning specific **pollutant sources** is also already available in the public domain. Investing time in researching the **pollutant source** will help to fine tune your project design and will help you avoid wasting time on the wrong potential **pollutant source**. For example, since news coverage and public records differ based on the individual **pollutant source**, it is crucial to start your research with the correct one. Identifying the correct **pollutant source** will allow you to conduct searches to obtain further information more easily.

Here, we recommend that you begin your research by addressing the following questions: Are there any media reports that involve the **pollutant source**? Are third-party monitoring records available? Is this source monitored by a federal or state agency (*i.e.*, does a state or federal agency have **jurisdiction** over this source) or is the source responsible for self-monitoring and reporting?

A good place to begin researching a **pollutant source** is by reviewing public media releases that might implicate the **pollutant source** with an environmental concern. You should also seek out publicly available permits and monitoring records (*e.g.*, generated by the source, a third party, and/or a government agency).³⁸ Additional public records may include prior inspections of the

³⁶ See *About Substance Registry Services (SRS)*, U.S. ENVTL. PROTECTION AGENCY, https://iaspub.epa.gov/sor_internet/registry/substreg/home/overview/home.do (last visited Feb. 7, 2019).

³⁷ See *Health and Environmental Agencies of U.S. States and Territories*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/home/health-and-environmental-agencies-us-states-and-territories> (last visited Feb. 7, 2019).

³⁸ Resources that will help you locate permitting and compliance information for **pollutant sources** include EPA’s Envirofacts, TRI Program, and Enforcement and Compliance History Online (“ECHO”). See *Envirofacts*, U.S. ENVTL. PROTECTION AGENCY, <https://www3.epa.gov/enviro/> (last visited Feb. 7, 2019); *Toxics Release Inventory (TRI) Program*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/toxics-release-inventory-tri-program> (last visited Feb. 7, 2019); *Enforcement and Compliance History Online (ECHO)*, U.S. ENVTL. PROTECTION AGENCY, <https://echo.epa.gov/> (last visited Feb. 7, 2019).

site of interest, prior compliance records, or reports submitted to governmental agencies by the **site** of interest. [Appendix 4](#) lists several resources provided by the EPA. Various state agencies also provide similar resources.

Additional information can be obtained through a Freedom of Information Act (“FOIA”) request. FOIA requires federal agencies to disclose any records requested by the public unless they fall into one of nine exemptions.³⁹ These exemptions include information that bears on national security and personal privacy, among other concerns.⁴⁰ Before making a FOIA request, you can conduct a search of information already made available by federal agencies at FOIAonline.gov and in their FOIA libraries to see if the information you seek has already been released.⁴¹ If the information you are searching for has not been released by an agency, you can also search online to see whether third parties (*e.g.*, a nonprofit organization, news organization, etc.) have released relevant materials obtained through FOIA. If that fails, then you may want to consider filing your own FOIA request.

Submitting a FOIA request does not involve any special forms and does not require any kind of legal expertise. You can simply write a letter to the agency most likely to possess those records, detailing the records you seek with reasonable particularity.⁴² Generally, the more specific your request is, the better; broader requests take considerably longer to process and are more likely to yield irrelevant results.⁴³ Additionally, some agencies require individuals to submit

³⁹ 5 U.S.C. § 552(a)(3)(A), (b); *see also* U.S. Department of Justice, *What is FOIA?*, FOIA.Gov, <https://www.foia.gov/about.html> (last visited Feb. 7, 2019).

⁴⁰ *See* 5 U.S.C. § 552(b).

⁴¹ FOIAONLINE.GOV, <https://www.foiaonline.gov/foiaonline/action/public/home> (last visited Feb. 7, 2019). Agencies, and sometimes even their individual component offices, have FOIA libraries. These libraries result from FOIA’s proactive disclosure requirements, which direct agencies to publicly release commonly requested records. *See* 5 U.S.C. § 552(a)(2); U.S. DEPARTMENT OF JUSTICE, *Proactive Disclosures*, in DEPARTMENT OF JUSTICE GUIDE TO THE FREEDOM OF INFORMATION ACT, at 9-22 (2009), <https://www.justice.gov/sites/default/files/oip/legacy/2014/07/23/proactive-disclosures-2009.pdf>. For example, EPA has a consolidated FOIA library online. *National Online FOIA Library*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/foia/national-online-foia-library> (last visited Feb. 7, 2019).

⁴² 5 U.S.C. § 552(a)(3)(A)(i).

⁴³ For a more detailed idea of what information to include in your FOIA request, you should look at the agency’s FOIA regulations. For example, EPA’s regulations provide as follows: “Your request should reasonably describe the records you are seeking in a way that will permit EPA employees to identify and locate them. *Whenever possible, your request should include specific information about each record sought, such as the date, title or name, author, recipient, and subject matter. If known, you should include any file designations or descriptions for the records that you want.* The more specific you are about the records or type of records that you want, the more likely EPA will be able to identify and locate records responsive to your request.” 40 C.F.R. § 2.102(c) (emphasis added).

a fee to cover the cost of record retrieval.⁴⁴ Broader requests, which tend to require more work on the agency's part, are likely to be more expensive. For a sample FOIA request letter you can fill out with your specific details, visit the National Freedom of Information Coalition's website.⁴⁵ Once you have written your request, you can locate the relevant agency's FOIA request contact information.⁴⁶

If the information you seek is more likely to be held by a state agency, then you will want to acquaint yourself with your state's public records law and see if you can make a similar document request. Every state has its own public records laws pertaining to public requests for information from state agencies. While some are very similar to FOIA, others are broader or more limited. To learn more about your state's public records law, you can access the National Freedom of Information Coalition's database of state public records laws.⁴⁷ This helpful resource also includes sample FOI request letters by state.⁴⁸ As with federal FOIA requests, you will want to make sure that your state records request is as detailed and specific as possible. If you encounter any difficulty in securing a response to your state FOI request, the Freedom of Information

⁴⁴ That being said, there are certain provisions that limit fee collection on FOIA requests. The reasonableness of such fees may vary according to whether the information sought is to be used for commercial or noncommercial purposes, with the latter meriting a lesser fee. 5 U.S.C. § 552(a)(4)(A)(ii). Fees may also be waived if the information sought is in the public interest. *Id.* § 552(a)(4)(A)(iii). Furthermore, the government agency waives its right to collect fees if it does not respond to the request within the statutorily mandated time limits. *Id.* § 552(a)(4)(A)(viii).

⁴⁵ *Sample FOIA Request Letters*, NAT'L FREEDOM OF INFORMATION COALITION, <https://www.nfoic.org/sample-foia-request-letters#foireq> (last visited Feb. 7, 2019).

⁴⁶ In order to make the FOIA process more efficient, you should try to determine the addressee of the FOIA request based on the topic and location of interest. For example, if you live in Texas and want to learn about the unauthorized release of a pollutant in your community, you should address your FOIA request to EPA Region 6's FOIA Office. *See The FOIA Request Process*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/foia/foia-request-process> (last visited Feb. 7, 2019); *see also Contact Us about the Freedom of Information Act and FOIA Requests*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/foia/forms/contact-us-about-freedom-information-act-and-foia-requests#Regional> (last visited Feb. 7, 2019). If you are concerned with a mining permit in Alaska, on the other hand, you should submit your FOIA request to the Department of the Interior Office of Surface Mining Reclamation and Enforcement's Western Region Office. *OSMRE Freedom of Information Act Program*, OFFICE OF SURFACE MINING RECLAMATION & ENFORCEMENT, <https://www.osmre.gov/lrg/FOIA.shtm> (last visited Feb. 7, 2019). An index of government agencies and departments is available on USA.gov. *See A-Z Index of U.S. Government Departments and Agencies*, USA.GOV, <https://www.usa.gov/federal-agencies/a> (last visited Feb. 7, 2019).

⁴⁷ *State Freedom of Information Laws*, NAT'L FREEDOM OF INFORMATION COALITION, <http://www.nfoic.org/state-freedom-of-information-laws> (last visited Feb. 7, 2019).

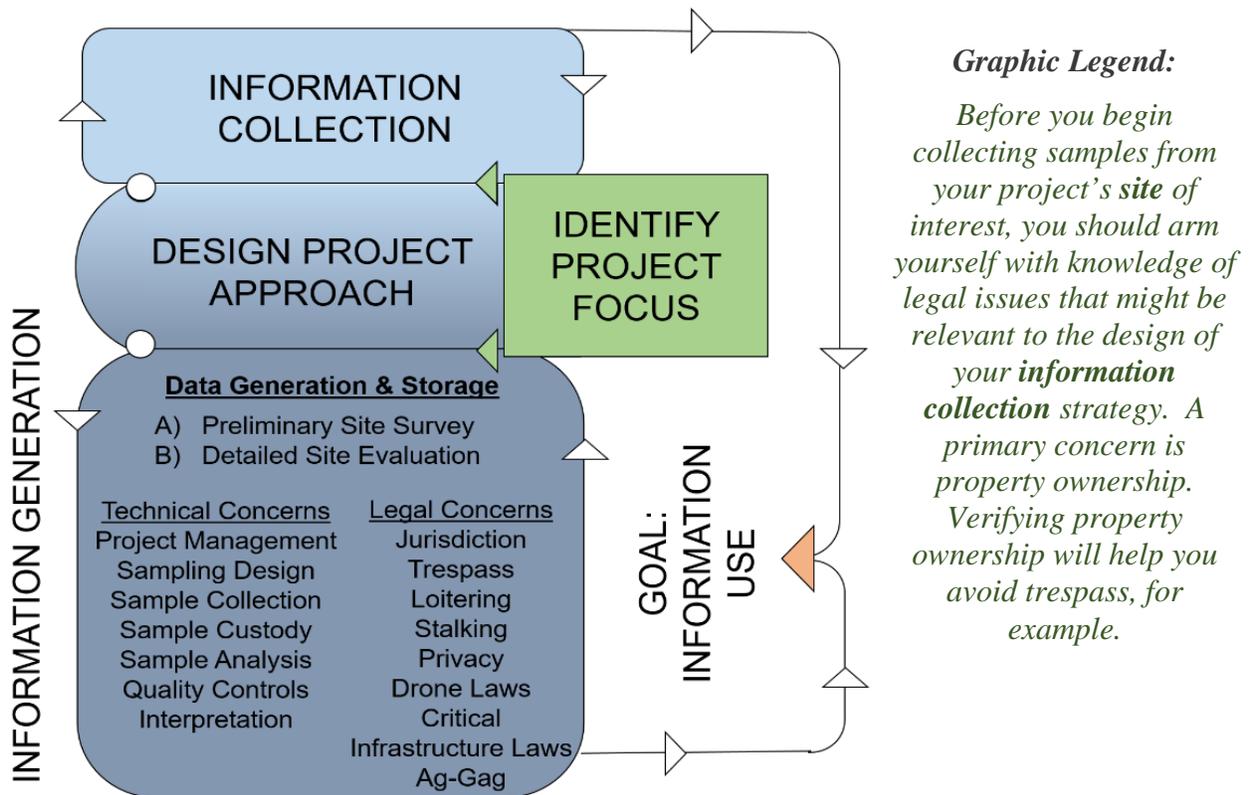
⁴⁸ *State Sample FOI Request Letters*, NAT'L FREEDOM OF INFORMATION COALITION, <http://www.nfoic.org/state-sample-foia-request-letters> (last visited Feb. 7, 2019).

Coalition and its affiliates have offices in every state that you can contact for advice and assistance.⁴⁹

⁴⁹ *NFOIC State and Regional Affiliates*, NAT'L FREEDOM OF INFORMATION COALITION, <http://www.nfoic.org/members> (last visited Feb. 7, 2019).

CHAPTER 4: INFORMATION COLLECTION – BEWARE POTENTIAL LIABILITY

Why You Should Read this Chapter: While most citizen science projects will not implicate legal concerns, there are nonetheless various laws that can limit your ability to gather information. This chapter gives an overview of these laws and provides suggestions on how to remain in compliance with them. It also notes areas where you may have a legal privilege to engage in certain activity, so that you can respond proactively. The content of this chapter is supplemented by Appendices [1](#) and [2](#), which provide a state-by-state analysis of the laws discussed.



Introduction

In most instances, we anticipate that you will not encounter legal difficulties in conducting research for your citizen science project. Your project's **site** of interest (which you identified as part of your **project approach** in [Chapter 1](#)) may be open to all citizens—meaning there are no legal barriers in collecting samples of air, water, and/or soil quality, or taking photographs. Many

federal and state agencies have issued guidelines that are favorable to the practice of citizen science. In sum, you should not let the fear of legal troubles deter you from pursuing your project. But, you should be aware of the laws that might apply to your project.

This chapter outlines the various legal claims that have been asserted (rightly or wrongly) against citizen scientists. It aims to arm you with some general knowledge, including things you are well within your rights to do as well as things you should avoid doing. Should you encounter a legal threat in the course of your project, our hope is that you will be able to figure out whether that threat is real or mere puffery, allowing you to take full advantage of your legal rights. Because many types of potential liability relate to actions you might take on private property, we begin by discussing property ownership.

Legal topics covered in this chapter include:

- 1) *Trespass*
- 2) *Loitering*
- 3) *Stalking*
- 4) *Privacy*
- 5) *Drone use*
- 6) *Critical infrastructure*
- 7) *Agency regulations*

Making Connections Between Chapters: In [Chapter 1](#), you identified your **project’s focus** and used that focus to design your project’s approach, which included the identification of a **site** of interest to you (*e.g.*, a natural resource or a **pollutant source**). In [Chapter 3](#), you collected publicly available information on any **pollutant sources** relevant to your project.

This chapter provides resources for you to extend this previous work, helping you to determine or verify property ownership of land on and surrounding your project **site** (*e.g.*, where you will collect samples). It then gives an overview of legal issues relevant to your sample collection design. This information can guide the scope of your **information generation** strategy (discussed in [Chapter 5](#)).

Property Ownership: Who owns the land where you want to gather information or collect samples?

In addition to securing any publicly available records that are relevant your project goals (discussed in [Chapter 3](#)), you should take steps to learn about ownership of the land where your project **site** is located, as well as the land surrounding it. One way to determine the ownership status of your project’s **site** of interest is to use Geographic Information System (“GIS”) maps.

GIS maps layer data over geography, allowing interactive visualization of geographic information on the map.⁵⁰ Many GIS maps display property lines and ownership information.⁵¹

A related resource is your local assessor's office, which maintains a public database of local property ownership. You can submit a request to your assessor's office to determine a given parcel's ownership information so long as you have the property's parcel number (oftentimes, this parcel number can be found using GIS maps). Note that many offices provide this information online – meaning you do not have to go in person to find certain information or submit a request for further information.⁵²

Property ownership determines whether you may access a property and whether you may collect samples, photos, or other information. For example, strict trespass and privacy laws apply to private property. Public property is managed by various government agencies that have their own special rules about who can access the land and for what purposes. Public lands can be roughly split into the following categories:

- *Federal Land:* Land owned by the federal government is managed either by the Department of the Interior or by the Department of Agriculture's Forest Service.⁵³ Within the Department of the Interior, the Bureau of Land Management is tasked with overseeing the majority of the federal government's on-shore landholdings,

Property ownership determines whether you may access a property and whether you may collect samples, photos or other information.

⁵⁰ See *What is Geographic Information Systems (GIS)?*, GIS GEOGRAPHY, <http://gisgeography.com/what-gis-geographic-information-systems/> (last updated Jan. 5, 2019).

⁵¹ See, e.g., *Mass. Interactive Property Map*, MASS. EXEC. OFFICE OF ADMIN. AND FINANCE, <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/online-mapping/massgis-par-vwr.html> (last visited Feb. 7, 2019) (GIS map of property in Massachusetts); *Tennessee Property Viewer*, STATE OF TENN., <http://tnmap.tn.gov/assessment/> (last visited Feb. 7, 2019) (GIS map of property in Tennessee).

⁵² See, e.g., *Automated City Register Information System*, NEW YORK CITY DEP'T OF FINANCE, <https://a836-acris.nyc.gov/CP/> (last visited Feb. 7, 2019) (New York City's online property database is commonly referred to as ACRIS). Online property databases, such as ACRIS, may also come with helpful instructions. See, e.g., *ACRIS Document Search Online Help*, NEW YORK CITY DEP'T OF IT & TELECOMMUNICATIONS, <https://a836-acris.nyc.gov/acrisHelp/docsearch/default.htm> (last visited Feb. 7, 2019).

⁵³ See *Summary*, in CONGRESSIONAL RESEARCH SERVICE, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA (Mar. 3, 2017), <https://fas.org/sgp/crs/misc/R42346.pdf> [hereinafter, "2017 Federal Land Ownership Report"].

which add up to about 1/8 of the nation's land.⁵⁴ These federal landholdings are especially concentrated in western states; 48.4% of Wyoming, for example, is federally-owned land.⁵⁵

- *State Land*: Each state has its own land-holding agencies that oversee the use of state-owned property. These generally include a state-wide Parks Department and a Department of Natural Resources. A great deal of state-held land—about 3/4—is in the form of trust lands—lands held by the state to benefit specific public purposes, most commonly to support public schools.⁵⁶ While some of these trust lands are commercially leased and unavailable to the public, in many cases they are open to public access. You should check with the state's Department of Natural Resources or Parks Department to see what activities are permitted in state parks and trust lands. Drone use and certain research activities, for example, may be restricted or prohibited.
- *Local/Municipal Land*: A lot of public property is also managed at the local or municipal level. Municipalities can own and rent land within city limits.⁵⁷ Many local parks, cemeteries, and waterways are subject to local ownership and control.⁵⁸ Generally, a municipality's Parks & Recreation Department or Water Department will have authority to administer such lands—and control access.
- *Maritime Territory*: Management of the oceans is split between the state and federal governments. The first three nautical miles from the coast are considered state property and are managed by the states.⁵⁹ The next nine nautical miles are U.S. territorial waters

⁵⁴ See *id.* (The United States has 2.27 billion acres of land); see also U.S. DEPARTMENT OF THE INTERIOR - BUREAU OF LAND MANAGEMENT, PUBLIC LAND STATISTICS 2017, at 7 (June 2018), <https://www.blm.gov/sites/blm.gov/files/PublicLandStatistics2017.pdf> (the Bureau of Land Management has jurisdiction over 245.6 million acres of public lands).

⁵⁵ 2017 Federal Land Ownership Report, *supra* note 53, at 9.

⁵⁶ See Steven M. Davis, *Preservation, Resource Extraction, and Recreation on Public Lands: A View from the States*, 48 NAT. RESOURCES J. 303, 306 (2008), <https://digitalrepository.unm.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1264&context=nrj>.

⁵⁷ See, e.g., MUNICIPAL ASSOCIATION OF SOUTH CAROLINA, FORMS AND POWERS OF MUNICIPAL GOVERNMENT (Dec. 2017), <https://www.masc.sc/SiteCollectionDocuments/Administration/Forms%20and%20Powers2.pdf>.

⁵⁸ *Id.*

⁵⁹ While most state-managed waters only extend out to three nautical miles beyond the shore, the seaward boundaries of Florida (Gulf of Mexico coast only), Texas, and Puerto Rico extend to nine nautical miles. See 43 U.S.C. § 1312; *Maritime Zones and Boundaries*, NAT'L OCEANIC & ATMOSPHERIC ADMINISTRATION OFFICE OF GENERAL COUNSEL, http://www.gc.noaa.gov/gcil_maritime.html (last visited Feb. 7, 2019) [hereinafter, "*Maritime Zones and Boundaries*"].

that are managed by the federal government (*i.e.*, the territorial sea).⁶⁰ Different federal agencies are responsible for regulating particular types of activities in federal waters. The Bureau of Ocean Energy Management (“BOEM”) and the Bureau of Safety and Environmental Enforcement (“BSEE”), both part of the Department of the Interior, manage offshore energy exploration and development.⁶¹ The National Marine Fisheries Service regulates fisheries and is responsible for the stewardship of marine protected species.⁶² The EPA has general authority over pollution discharges not associated with energy development and minerals (which would fall under BOEM/BSEE’s purview). The Coast Guard is the primary law enforcement authority in these waters.⁶³

Knowing the property lines and ownership status of properties you want to access is an important first step when it comes to determining what you are allowed to do on the property. Knowing who owns the property on which you want to conduct research may have another benefit: in many cases, reaching out to the property owner or managing agency ahead of time to see if you can conduct your citizen science project on their land will resolve any disputes at the outset. For example, you can avoid the risk of trespass liability if you have already received permission from the property owner to conduct research on his or her land.

Potential Legal Challenges

In this subsection, we identify categories of laws that restrict access to land. Appendices [1](#) and [2](#) provide a 50-state survey⁶⁴ of the laws discussed in this chapter. Neither this subsection nor the appendices provide complete and detailed answers about the applicable laws in any given state; instead, they are intended to give you a broad overview of the applicable laws. We encourage you to use the tools at your disposal, such as local libraries and the internet, to conduct further research about the local laws where you live. Laws change and evolve; please remember that the resources in this manual do not constitute legal advice, and that you should seek representation should you encounter any legal issues.

⁶⁰ See *Maritime Zones and Boundaries*, *supra* note 59.

⁶¹ *History*, BUREAU OF SAFETY & ENVTL. ENFORCEMENT, <https://www.bsee.gov/who-we-are/history> (last visited Feb. 7, 2019).

⁶² See *About Us*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/about-us> (last visited Feb. 7, 2019).

⁶³ See U.S. COAST GUARD, <https://www.work.uscg.mil/> (last visited Feb. 7, 2019).

⁶⁴ This survey also includes the Commonwealth of Puerto Rico, an unincorporated territory of the United States.

1. *Trespass*

Summary: You commit a trespass only when you go on someone else’s land without the owner’s permission. If you stay on public or private lands where you have permission to be, then trespass laws will not be a problem for your research. If you need to take samples on private land or cross private land to get to your sampling location, then you can seek permission from the property owner. Otherwise, you will generally be safe if you avoid areas that are marked off by fences or “no trespassing” signs. In a few states (indicated in this subsection), you need to use GIS maps to identify property boundaries and therefore avoid accidentally crossing onto someone’s property. Additionally, a few states have specialized laws that punish trespass and even photography around industrial and agricultural **sites**. You will want to be aware of whether your state has such a law. For the most part, you can avoid trouble under these laws by not entering any clearly off-limits **sites**—the same advice as with trespass generally. Nonetheless, it would be wise to utilize GIS maps and to be aware of property lines when conducting research around such a facility.

Broadly defined, a trespasser is someone who physically enters or remains on another person’s property without that person’s consent.⁶⁵ Liability for trespass generally takes two forms: criminal (prosecution by the government) and civil (private lawsuits). In addition, certain states impose heightened liability for trespass—or even taking photographs—around industrial or agricultural facilities.

a. General Criminal and Civil Trespass

Every state has its own criminal trespass statute. If you are interested in learning more about your state’s criminal trespass statute, you can begin by locating your state’s criminal code online.⁶⁶ These statutes generally define trespass as unauthorized entry onto someone else’s land. Beyond that basic definition, many states have varying degrees of criminal trespass, meaning that certain forms of trespass may be punished more severely than others. In Alabama, for example,

⁶⁵ *Cf.* Restatement (Second) of Torts § 329.

⁶⁶ Cornell University’s Legal Information Institute has compiled each state’s criminal code at https://www.law.cornell.edu/wex/table_criminal_code (last visited Feb. 7, 2019). Upon locating your state’s criminal code, you can follow the hyperlink to its criminal trespass laws in the table of contents.

first degree criminal trespass occurs when a person knowingly enters someone else’s home without permission;⁶⁷ second degree trespass occurs when a person crosses, without authorization, onto private land that is fenced off or otherwise bears markers of private property.⁶⁸

The role of notice varies among state criminal trespass statutes. Most states require that, to be guilty of criminal trespass, an individual must have had notice that he or she was entering private property without authorization (*e.g.*, a “no trespassing” sign or a fenced off area). Six states, however, do not require notice: ***Colorado, Louisiana, Tennessee*, Utah, Wisconsin, and Wyoming***. In these states, trespass is an absolute liability crime—meaning that being unaware that you were not supposed to be on the property in question is not a valid defense in these instances.⁶⁹ If you are conducting your project in one of these states, you should carefully scrutinize current GIS maps and property records before entering your project’s **site** of interest.⁷⁰ In other states, common sense should suffice: avoid entering fenced or marked-off areas without permission.

In addition to criminal statutes, every state also allows landowners to bring civil lawsuits for trespass. These are generally governed by common law – meaning there is no statute to look at when determining what constitutes civil trespass; the law is developed by judges in their decisions. Many judges define it in the same way as criminal trespass: voluntary entry onto someone else’s property without consent or authorization.⁷¹ Ultimately, this means that you may be liable for any damage you cause to someone else’s property while conducting research on that property. Moreover, even if no quantifiable damage is done, many courts will allow the property owner to recover nominal damages for the very fact of the trespass.⁷² However, these nominal damages are typically very small.

⁶⁷ Ala. Code § 13A-7-2.

⁶⁸ Ala. Code § 13A-7-3.

⁶⁹ Tennessee is the only state from this list that provides a defense to prosecution. However, lack of notice alone is not a sufficient defense. The alleged trespasser must prove three elements: (1) The person entered or remained on property that she reasonably believed to be property for which the owner’s consent to enter had been granted (*i.e.*, lack of notice); (2) The person’s conduct did not substantially interfere with the owner’s use of the property; and (3) The person immediately left the property upon request. Tenn. Code Ann. § 39-14-405(b).

⁷⁰ For further information on what these informational tools are and how to access them, see [Chapter 3](#).

⁷¹ Restatement (Second) of Torts § 158.

⁷² See *Foust v. Kinney*, 80 So. 474, 475 (Ala. 1918); see also *Brown Jug, Inc. v. Int’l Brotherhood of Teamsters, Chauffeurs, Warehousemen & Helpers of Amer.*, 688 P.2d 932, 939 (Alaska 1984); *Hale v. Brown*, 323 P.2d 955, 963 (Ariz. 1958) (It is a “well-established and deeply-rooted legal principle that a person has the right to vindicate any trespass upon his legal rights . . . for at least nominal damages.”).

b. *Specialized Trespass Statutes: Ag-Gag, Data Collection & Critical Infrastructure Trespass Laws*

In addition to basic trespass liability, many states have specialized statutes that address trespass on and monitoring of agricultural facilities, colloquially known as “Ag-Gag laws.” At the time of writing, 22 states had such laws. Ag-Gag laws are compiled in the spreadsheet in Appendices [1](#) and [2](#). These statutes tend to have the same basic elements: an alleged trespasser entered or remained on an agricultural facility (i) without effective consent, (ii) intending to disrupt or damage the enterprise conducted at the animal facility, and (iii) had notice that entry was forbidden or received notice to depart and did not. Some also include a separate legal claim for taking photos or videos of such a facility with the intent of damaging its enterprise (*e.g.*, by publishing damning information about it).⁷³ In summary, when seeking to monitor an agricultural facility, you should check to see if your state has an applicable Ag-Gag law.

Wyoming is currently unique in that it has a trespass law that specifically targets citizen scientists.⁷⁴ This statute creates a new criminal offense called “trespassing to unlawfully collect resource data.”⁷⁵ The offense is defined as trespassing on private property for the purpose of collecting “data relating to land or land use, including but not limited to data regarding agriculture, minerals, geology, history, cultural artifacts, archeology, air, water, soil, conservation, habitat, vegetation or animal species.”⁷⁶ The statute is triggered either by collecting resource data on private land or by crossing private land to collect resource data on public land. A violation of this statute triggers enhanced penalties, compared to ordinary trespass. For a first offense, the punishment is up to one year in prison plus a fine of up to \$1,000; the maximum fine is increased to \$5,000 for repeat offenders.⁷⁷ A related statute allows property owners to bring a civil damages action against trespassers.⁷⁸ Someone can be liable under both the criminal and the civil statutes even if the private property boundaries are unmarked.

⁷³ See, *e.g.*, Kan. Stat. Ann. § 47-1827(c)(4).

⁷⁴ Wyo. Stat. § 6-3-414(a).

⁷⁵ *Id.*

⁷⁶ *Id.* § 6-3-414(e)(iv).

⁷⁷ *Id.* § 6-3-414(d).

⁷⁸ Wyo. Stat. § 40-27-101(d).

A number of environmental groups challenged this law in court, arguing that it violates their free speech rights under First Amendment of the U.S. Constitution. A federal appeals court found that subsection (c) of the statute, which defines the prohibited conduct to include crossing private property in order to collect resource data on nearby public lands, implicates protected speech. The court therefore sent the case back to the trial court to determine whether this impact on protected speech violated the Constitution.⁷⁹ On remand, the trial court held that subsection (c) violated the First Amendment and enjoined Wyoming from enforcing it.⁸⁰ This decision leaves in place, however, the portions of the law that provide enhanced penalties for trespassing for the purpose of collecting resource data on private property.

Citizen scientists in Wyoming should be especially careful about identifying private property boundaries, particularly because these are often unmarked. One way to accomplish this is by using GIS maps and public records to identify the ownership and property lines in any locations where you want to take samples and along your routes to reach those **sites**.

Finally, some states treat it more seriously when someone trespasses on certain industrial, agricultural, or government-owned facilities. These laws, which impose heightened liability for trespass on “critical infrastructure,” are discussed in-depth in [Subsection 6.6. Critical Infrastructure](#) below.

2. *Loitering*

Summary: Loitering laws are generally written by local governments rather than states, so it is not possible for us to compile all of the potentially relevant laws. In general, however, you cannot be liable for loitering just because you are hanging around a public place. Courts have held that such “pure” loitering laws are unconstitutional. Instead, loitering laws are typically constitutional only when they target loitering in connection with some otherwise illegal activity. This means that if you follow the suggestions given with respect to the other laws discussed in this chapter, you will likely avoid the possibility of loitering liability. And, you can inform anyone who threatens you with loitering that your conduct is protected.

⁷⁹ *W. Watersheds Project v. Michael*, 869 F.3d 1189 (10th Cir. 2017).

⁸⁰ *W. Watersheds Project v. Michael*, 353 F. Supp. 3d 1176 (D. Wyo. 2018).

Loitering is a second offense potentially relevant to your citizen science project. Defined broadly, loitering means hanging around a public place or business without an apparent legal purpose.⁸¹ Generally, loitering laws are established at the local or municipal level. Thus, you will want to check your local area's anti-loitering provisions before spending time around your identified project **site**. At least one state, California, includes loitering within its criminal trespass laws (*see* [Subsection 6.6. Critical Infrastructure](#) below).

The U.S. Supreme Court has invalidated loitering laws that do not include a separate, objective element of criminal behavior (*e.g.*, criminal and specialized trespass, etc.).⁸² This undermines the validity of any criminal loitering statute that simply criminalizes loitering in and of itself.⁸³ As a result, your potential liability for loitering is likely low if you are not also breaking a separate *criminal* law. You should feel comfortable taking advantage of this aspect of loitering laws: if someone accuses you of loitering when you are otherwise participating in perfectly innocent activity, then you can respond by saying that whatever loitering law they are referring to is not likely to include your conduct.

⁸¹ *See Loitering*, THE FREE LEGAL DICTIONARY, <http://legal-dictionary.thefreedictionary.com/loiter> (last visited Feb. 7, 2019).

⁸² *See generally Papachristou v. City of Jacksonville*, 405 U.S. 156 (1972); *City of Chicago v. Morales*, 527 U.S. 41, 41-45 (1999).

⁸³ *See Note, Striking a Balance: The Efforts of One Massachusetts City to Draft an Effective Anti-Loitering Law Within the Bounds of the Constitution*, 39 SUFFOLK U. L. REV. 1069, 1081 (2006); Kim Strosnider, Note, *Anti-Gang Ordinances After City of Chicago v. Morales: The Intersection of Race, Vagueness Doctrine, and Equal Protection in the Criminal Law*, 39 AM. CRIM. L. REV. 101, 126 (2002).

3. *Stalking*

Summary: Generally, it is a good practice to maintain a comfortable distance from and to avoid repeated contact with the same individuals in the course of your research (unless they have invited the contact or interaction!). You should especially avoid photographing or filming the same individuals on a recurring basis, which might be interpreted as harassing behavior.

You should also review relevant state stalking laws to determine the point at which conduct is considered stalking and whether “stalking” requires general or specific intent. Typically, stalking laws that require “specific intent” will not apply to your role as a citizen scientist. If the stalking laws relevant to your project’s **site** of interest require “general intent,” you might consider letting the local community know about your project ahead of time to eliminate any cause for alarm.

If your project involves recurring interaction with or surveillance of the same individuals (e.g., photographing or video recording), you will want to familiarize yourself with your state’s stalking laws.⁸⁴ Generally, you can avoid stalking liability if you space your research out temporally and if you avoid repeated contact with the same individuals (unless they have invited the contact or interaction).

Every state has a criminal anti-stalking statute (*see* Appendices [1](#) and [2](#) for specific references to each state).⁸⁵ States tend to define stalking as repeated and willful following of another person, often paired with some malevolent purpose or action, such as threatening or harassing behavior.⁸⁶ A person violates California’s anti-stalking law, for example, if he or she “willfully, maliciously, and repeatedly follows or harasses another person and makes a credible threat with the intent to place that person in reasonable fear of death or great bodily harm or to

⁸⁴ As with criminal trespass laws, stalking laws are often classified into varying degrees. Generally, higher degree stalking crimes include the issuance of credible threats, repeated convictions, contact in violation of a restraining order, stalking of a minor, and harassment on the basis of sex, race, religion, or sexual orientation. Because your behavior as a citizen scientist will not likely encompass any of these aggravating factors, this subsection and Appendices [1](#) and [2](#) focuses on lower degree stalking violations.

⁸⁵ *See* Kathleen G. McAnaney, Laura A. Curliss & C. Elizabeth Abeyta-Price, Note, *From Imprudence to Crime: Anti-Stalking Laws*, 68 NOTRE DAME L. REV. 819, 821 (1993).

⁸⁶ *Id.*

place that person in reasonable fear of the death of or great bodily injury of his or her immediate family.”⁸⁷

While state anti-stalking statutes are similar in some respects, they can differ in a few key ways. One difference relates to the point at which conduct is considered sufficiently repetitive and continuous to be considered stalking. For example, Arkansas’s statute requires “a pattern of conduct composed of two (2) or more acts separated by at least thirty-six (36) hours but occurring within one year.”⁸⁸ Other states require conduct that is more repetitive and continuous. For example, Alabama requires “a series of acts over a period of time which evidences a continuity of purpose.”⁸⁹ Louisiana also requires a “series of acts” for the conduct to rise to the level of stalking.⁹⁰

State stalking laws also differ in whether they require general or specific intent. For stalking laws requiring specific intent, you are only guilty of stalking if you intended to harass or threaten the person alleging the violation; for those requiring general intent, you can be guilty of stalking even if you did not intend to harass the person(s) alleging that you stalked them.

If the relevant state defines stalking as a specific intent crime, it is unlikely that your work as a citizen scientist will expose you to liability for stalking because the purpose of your activity is to conduct research, not to harass anyone.

If the relevant state defines stalking as a general intent crime, however, then you may want to take the extra step of notifying anyone residing on or near the property on which you want to conduct research. You might, for example, post flyers in the neighborhood notifying individuals that you are conducting a citizen science project. If people understand what you are doing in or around their neighborhood, then they should not have reason to be threatened by your presence. It might also mobilize the local community around your citizen science project, in keeping with the spirit of citizen science.

While stalking is generally a crime, thirteen states—*Arkansas, California, Kentucky, Michigan, Nebraska, Oregon, Rhode Island, South Dakota, Tennessee, Texas, Virginia,*

⁸⁷ Cal. Penal Code § 646.9(a).

⁸⁸ Ark. Code Ann. § 5-71-229(f)(1)(A).

⁸⁹ Ala. Code. § 13A-6-92(a).

⁹⁰ La. Rev. Stat. 14:40.2(C)(2).

Washington, and Wyoming—also allow civil lawsuits for stalking,⁹¹ so that individuals may recover damages for the emotional distress they experience. As with the criminal stalking laws, these are included in Appendices [1](#) and [2](#).

4. *Invasion of Privacy*

Summary: Privacy laws are relevant when you are working in or around residential areas. If this is true of your project, you should try to notify area residents of your project ahead of time to ease any apprehension they may otherwise feel about your presence. You should also avoid taking and, in particular, publishing photos or videos of people in their homes.

Repeated contact with the same individual(s), especially involving photographing or video recording, may constitute an invasion of privacy. Privacy claims are only available to individual persons and not corporate entities.⁹²

There are four basic kinds of legal causes of action for invasion of privacy: (i) unauthorized use of name or likeness; (ii) public disclosure of private matters; (iii) publicity placing one in a highly offensive false light; and (iv) intrusion upon private affairs.⁹³ Intrusion upon private affairs occurs when someone intentionally intrudes, physically or otherwise, upon another’s solitude or private affairs in a manner that would be offensive to a reasonable person.⁹⁴ This could occur when the person alleging the intrusion was at his or her own home or yard when another is taking photographs of him/her; one who enters public space cannot reasonably expect a great degree of privacy.⁹⁵

⁹¹ *Civil Stalking Laws by State*, STALKING RESOURCE CENTER, <https://victimsofcrime.org/our-programs/stalking-resource-center/stalking-laws/civil-stalking-laws-by-state> (last updated Oct. 2017).

⁹² See Restatement (Second) of Torts § 652I(c); see also *United States v. Morton Salt Co.*, 338 U.S. 632, 652 (1950) (“[C]orporations can claim no equality with individuals in the enjoyment of a right to privacy.”); *Fleck & Assocs., Inc. v. Phoenix, City of, an Arizona Mun. Corp.*, 471 F.3d 1100, 1104-05 (9th Cir. 2006) (holding that a corporation is not entitled to “‘purely personal’ guarantees,” such as a right to privacy, which has “historically been granted to protect individuals”); Elizabeth Pollman, *A Corporate Right to Privacy*, 99 MINN. L. REV. 27, 37-44 (2014).

⁹³ VINCENT R. JOHNSON, *ADVANCED TORT LAW: A PROBLEM APPROACH* 312 (1st ed. 2010).

⁹⁴ Restatement (Second) of Torts § 652B.

⁹⁵ Phillip Hassman, *Taking Unauthorized Photographs as Invasion of Privacy*, 86 A.L.R. 3d 374 (Originally published in 1978); see also *Truxes v Kenco Enterprises, Inc.* 119 N.W.2d 914, 919-20 (S.D. 1963) (post office worker’s invasion of privacy claim for an unauthorized photo taken of him while at work failed due to his place of employment not being a private space).

In general, you can go a long way in avoiding claims of intrusion upon private affairs if you (i) do not enter people's private space and (ii) exercise caution when taking pictures or videos around people's homes or publishing those pictures or videos.⁹⁶ If your work occurs near private residences and entails visual evidence, make sure that any materials you publish do not include images of persons within those residences. Taking photographs of individuals who are standing outside on their own property, so long as the photographer does not enter the private property, is not considered an invasion of privacy because the conduct is clearly visible to passersby and is therefore effectively public conduct.⁹⁷ It can be worthwhile to notify any community members around whom you are working of your project's goal and scope. Let people know why you are working near their properties, and they will have less reason to feel that you are intentionally intruding upon their privacy.

5. *Drone Laws*

Summary: Drones may be subject to three different kinds of law: state drone statutes, Federal Aviation Administration ("FAA") regulations, and common law. Because state drone law is still developing, you should routinely check state laws. In addition, you should always comply with FAA regulations by appropriately registering your drone. Moreover, you should be careful about using drone photography, as certain states have passed laws criminalizing drone footage of industrial facilities. Finally, drone footage of people in their private residences is also likely forbidden in your state, either by statute or common law.

Drones, or unmanned aircraft systems ("UAS"), are an increasingly popular tool for environmental data collection. UAS have been used for, among other things, identifying the trajectory of an oil spill, tracking toxic algae blooms, measuring water temperature, detecting air contaminants, producing high resolution aerial surveys, and taking water samples. Lawmakers are just beginning to respond to UAS use. As such, the current body of law related to drone use is still

⁹⁶ See Hassman, *supra* note 95.

⁹⁷ See, e.g., *United States v. Santana*, 427 U.S. 38, 42 (1976) (holding that there is no expectation of privacy when an individual is "exposed to public view, speech, hearing, and touch as if she had been standing completely outside her house"); *Swerdlich v. Koch*, 721 A.2d 849, 857-58 (R.I. 1998) ("The plaintiffs were not entitled, nor could they reasonably have expected, to maintain privacy with respect to those activities taking place outside of their residence in a location visible to any passersby."); *Sundheim v. Board of County Comm'ners*, 904 P.2d 1337, 1351-52 (Colo. App. 1995) ("Because there is no invasion of privacy involved in observing that which is plainly visible to the public, a person's real property is not protected from observations lawfully made from outside its perimeter.").

developing. It is very likely that some of the information contained in this section, especially the status of state drone legislation, may have changed by the time you read this manual. Therefore, you should be careful to double check the status of drone laws in the state(s) where you are conducting citizen science.

Currently, drone usage is governed by (i) federal law, (ii) state statutes, and (iii) state common law. The following subsections cover each of these categories in turn.

a. Federal Law

The FAA has statutory authority to regulate airspace to the extent necessary to maintain its safety.⁹⁸ Drones are considered to be “aircraft” and as such are subject to federal regulation. The treatment of small drones (those weighing less than 55 pounds) varies, depending upon whether they are being used for commercial or recreational purposes. As long as the person operating the drone for a citizen science project is not being paid to do so, citizen scientist use of drones probably falls on the “recreational” side of this dichotomy.⁹⁹

Recreational use of small drones is governed by the Exception for Limited Recreational Operations of Unmanned Aircraft, which Congress adopted as part of the FAA Reauthorization Act of 2018.¹⁰⁰ The Exception requires that UAS operators only fly for recreational purposes; follow a community-based set of safety guidelines; fly the UAS within visual line-of-sight; give way to manned aircraft; obtain permission from the Administrator or her designee before flying within airspace designated for an airport or other restricted uses; fly the UAS not more than 400

⁹⁸ The use of small drones, defined as those weighing fewer than 55 pounds, is governed by 14 C.F.R. pt. 107. While small drones do not need to undergo the extensive airworthiness certification requirements imposed on larger aircrafts, they are still subject to many of the same rules. Drones weighing more than 55 pounds will need to undergo the airworthiness exemption process outlined in 49 U.S.C. § 44807. *See Special Authority for Certain Unmanned Aircraft Systems (Section 44807)*, FEDERAL AVIATION ADMINISTRATION, https://www.faa.gov/uas/advanced_operations/section_333/ (last updated Dec. 14, 2018).

⁹⁹ Commercial use of drones is governed by the “Part 107” rules. *See* 14 C.F.R. pt. 107. Under these rules, an operator must obtain a Remote Pilot Certificate or be under the direct supervision of someone who holds such a certificate, register the UAS with the FAA, and adhere to a set of operating guidelines, including: (1) fly the drone at or below 400 feet; (2) keep the drone within the operator’s line of sight; (3) be aware of FAA Airspace Restrictions; (4) respect privacy; (5) do not fly near other aircraft, especially near airports; (6) do not fly over groups of people, public events, or stadiums full of people; (7) do not fly near emergencies such as fires or hurricane recovery efforts; and (8) never fly under the influence of drugs or alcohol. *See Getting Started, Unmanned Aircraft Systems*, FEDERAL AVIATION ADMINISTRATION, https://www.faa.gov/uas/getting_started/ (last updated Oct. 18, 2018). Some of the activities listed above may be allowed after obtaining a waiver. *See Certificated Remote Pilots including Commercial Operators, Unmanned Aircraft Systems*, FEDERAL AVIATION ADMINISTRATION, https://www.faa.gov/uas/commercial_operators/ (last updated Dec. 18, 2018).

¹⁰⁰ Pub. L. No. 115–254, § 349, 132 Stat. 3,186, 3,297-98 (2018) (codified at 49 U.S.C. § 44809).

feet above the surface; pass an aeronautical knowledge and safety test; and register the UAS with the agency.¹⁰¹ Operators who comply with the Exception do not need to get pre-approval from the FAA or a Remote Pilot Certificate.¹⁰²

Because the FAA is primarily tasked with enforcing the safety of public airways, federal law does not touch upon issues of privacy implicated by drone use.¹⁰³ The federal government has instead left this area of lawmaking to individual states. Once you have verified that your drone complies with the relevant federal laws and regulations, you should determine whether your state has passed any drone privacy laws.

b. State Statutes—Drone Privacy Laws

Many states have passed statutes pertaining to drone usage and privacy. To date, 27 states impose criminal liability for unlawful drone usage, including the unauthorized surveillance of individuals and certain types of industrial facilities (*see* [Subsection 6](#) below). In addition, North Carolina provides a civil cause of action against drone surveillance of persons or private real property without consent.¹⁰⁴ For an overview of these states, including their specific language, *see* [Appendices 1](#) and [2](#).

Importantly, these laws apply to drone photography rather than ordinary handheld photography.¹⁰⁵ In most instances, taking pictures and video on your own, without drone assistance, will be less susceptible to legal challenges. Accordingly, you should ascertain whether

¹⁰¹ 49 U.S.C. § 44809(a).

¹⁰² *See id.*; *see also* *Recreational Fliers & Modeler Community-Based Organizations, Unmanned Aircraft Systems*, FEDERAL AVIATION ADMINISTRATION, https://www.faa.gov/uas/recreational_fliers/ (last updated Jan. 30, 2019).

¹⁰³ Patrice Hendriksen, Note, *Unmanned and Unchecked: Confronting the Unmanned Aircraft System Privacy Threat Through Interagency Coordination*, 82 GEO. WASH. L. REV. 207, 228-38 (2013).

¹⁰⁴ N.C. Gen. Stat. § 15A-300.1(b) & (e).

¹⁰⁵ Ark. Code § 5-16-101 is an exception.

your state has passed a drone privacy law before using a drone for data gathering and consider alternative methods of gathering the information you seek.

6. *Common Law Causes of Action*

Even when states have not adopted drone privacy laws, civil common law causes of action against drone use may apply. These include nuisance, trespass, and privacy.

a. *Nuisance*

A private nuisance claim is typically brought when a landowner's quiet enjoyment of his or her land is disturbed.¹⁰⁶ To succeed on a nuisance claim, a plaintiff must prove: (i) substantial harm; and (ii) that the imposition of the harm is unreasonable.¹⁰⁷

To date, we are not aware of any cases in which a plaintiff has brought a common law nuisance claim against a drone operator; however, plaintiffs have brought common law nuisance claims and succeeded against airplane operators.¹⁰⁸ Most of these claims have depended on factors like dust production, noise, vibration, and flight frequency.¹⁰⁹ While each of these factors would likely be considered in the context of a nuisance claim brought against a drone operator, they are arguably less applicable to drones than to airplanes. After all, drones produce significantly less dust, noise, and vibrations than airplanes.

There are various steps you can take to avoid claims of nuisance. For example, you can avoid flying your drone over the same space with great frequency. In addition, you can determine whether the noise emitted by your drone exceeds your locality's noise ordinances, which often outline acceptable levels of noise by property type and time of day. Many localities make this information available online.¹¹⁰

¹⁰⁶ Restatement (Second) of Torts § 821D.

¹⁰⁷ *Id.*

¹⁰⁸ See Michelle Bolos, *A Highway in the Sky: A Look at Land Use Issues that will Arise with the Integration of Drone Technology*, 2015 U. ILL. J.L. TECH. & POL'Y 411, 422 (2015).

¹⁰⁹ See Jack L. Litwin, *Airport Operations or Flight of Aircraft as Nuisance*, 79 A.L.R.3d 253 (Originally published in 1977).

¹¹⁰ See, e.g., Noise Control, Cambridge, Massachusetts, Municipal Code ch. 8.16, https://www.municode.com/library/ma/cambridge/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.16NOCO&searchText= (last visited Feb. 7, 2019).

b. *Trespass*

Operating a drone over someone’s private airspace may also constitute common law trespass. This is less likely than in the case of physical, ground-level trespass because ownership of airspace above a property is not as clearly established. Landowners own as much space above the ground as can be *reasonably* used in connection with the land.¹¹¹ What constitutes *reasonable* use of this airspace remains uncertain; however, one thing is clear: a person’s ownership of airspace above a property is not infinite. At some point, the airspace is in the public domain. Ultimately, the higher you fly your drone, the less likely you are to commit a trespass.¹¹² Recall, however, that federal law includes explicit height limitations for drone operators—recreational users under the Exception and commercial users under the Part 107 rules must operate the drone below 400 feet.

¹¹¹ *United States v. Causby*, 328 U.S. 256, 264 (1945).

¹¹² The Restatement (Second) of Torts provides an indication as to how this rule might be interpreted: “In the ordinary case, flight at 500 feet or more above the surface is not within the ‘immediate reaches,’ while flight within 50 feet, which interferes with actual use, clearly is, and flight within 150 feet, which also so interferes, may present a question of fact.” See Restatement (Second) of Torts § 159, Comment on Subsection (2). You should remain attentive to any developments in this area occurring after the publication of this manual. To that end, many online blogs and journals offer up-to-date posts on major developments in drone law. See, e.g., DRONE LAW JOURNAL, <http://dronelawjournal.com/> (last visited Feb. 7, 2019); *Drone Law Blog*, RUPPRECHT LAW P.A., <http://jrupprechtlaw.com/drone-law-blog> (last visited Feb. 7, 2019).

c. *Privacy*

A final type of claim worth mentioning in relation to drone use is common law privacy, which has already been covered in this chapter. Many of the suggestions relating to privacy that were previously given are equally applicable in the context of drone use: avoid flying your drone near private residences; try to maintain a healthy distance and keep flight frequency to a minimum; and make sure to notify any local residents of your citizen science project before commencing drone operation. If your drone carries a camera, you should avoid taking and, in particular, publishing pictures of people on their private property.

7. *Critical Infrastructure Laws*

Summary: Critical infrastructure laws heighten penalties for individual trespass and unlawful drone use (*see* Subsections [1](#) and [5](#) above). Because state critical infrastructure law is still developing, you should routinely check state laws. Such research is especially important when you are initially choosing the **site** of your citizen science project (as discussed in [Chapter 1](#)) and the methods of observation. You should carefully consider whether such restrictions necessitate an attenuated sampling location or different **site** altogether.

As discussed above, critical infrastructure laws provide heightened penalties for individual trespass and unlawful drone surveillance of certain industrial, agricultural, and government-owned facilities (*i.e.*, critical infrastructure). This term, and synonymous statutory phrases, often encompass various **sites** that may be of interest to citizen scientists. For example, under Arizona’s critical infrastructure drone use law, “critical facility” includes, but is not limited to:

“(a) A petroleum or alumina refinery; (b) A petroleum, chemical or rubber production, transportation, storage or processing facility; (c) A chemical manufacturing facility; (d) A water or wastewater treatment facility and water development, distribution or conveyance system, including a dam; (e) An electric generation facility, . . . and any associated substation or switchyard; an electrical transmission or distribution substation; (f) An electrical transmission line of at least sixty-nine thousand volts; an electronic communication station or tower; . . . (i) An energy control center; (j) A distribution operating center; (k) A facility that transfers or distributes natural gas, including a compressor station, regulator

station, city gate station or pressure limiting station or a liquefied natural gas facility or supplier tap facility; (l) Any railroad infrastructure or facility;”¹¹³

It is extremely important to check your state law’s definition of “critical infrastructure” as the covered facilities differ state-by-state, and even between trespass and drone laws within the same state. For example, while Minnesota’s critical infrastructure trespass law applies to belowground pipelines housed in underground structures,¹¹⁴ Nevada’s critical infrastructure drone use law explicitly excludes “any facility or infrastructure of a utility that is located underground.”¹¹⁵

Moreover, as these types of laws are grounded in national security concerns and protecting the continued provision of public services, penalties under these provisions can be significant. For example, violation of Arizona’s critical infrastructure drone use law is a class 6 felony punishable by a maximum fine of \$150,000, imprisonment not to exceed 1.5 years, or both.¹¹⁶ To avoid these legal dangers, it is essential that you research the critical infrastructure laws in your state before choosing the **site** of your citizen science project and the means of observation.

a. Trespass

To date, fourteen states impose a heightened penalty when someone trespasses on critical infrastructure. These states include *Alabama, Arizona, California, Indiana, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, Texas, and Wisconsin*.

California’s critical infrastructure trespass statute is unique as the law makes it “unlawful to loiter in the immediate vicinity of any posted property.”¹¹⁷ “Posted property” includes oil wells, gas plants, reservoirs, dams, and sanitary sewage and waste water treatment facilities, among other covered entities.¹¹⁸ While this statute does not separately define “loitering,” another part of the California criminal code defines the term as “to delay or linger without a lawful purpose for being on the property and for the purpose of committing a crime as

¹¹³ Ariz. Rev. Stat. § 13-3729(F)(3).

¹¹⁴ Minn. Stat. § 609.6055.

¹¹⁵ Nev. Rev. Stat. § 493.020(2).

¹¹⁶ Ariz. Rev. Stat. §§ 13-3729(E), 13-702(D); 13-801(A).

¹¹⁷ Cal. Penal Code § 555.2.

¹¹⁸ *Id.* § 554.

opportunity may be discovered.”¹¹⁹ This definition limits liability to instances when the person is lying in wait to commit a separately criminalized offense. Accordingly, it is unlikely that a citizen scientist will be found liable under this section unless they loitered with the intent to commit a *separate criminal act* (see [Subsection 2](#)).

If your project has identified a power plant, refinery, distribution utility, or other such facility as its **site** of interest, you will want to take extra care to identify whether your state has a critical infrastructure trespass statute. For this, you can refer to the comprehensive state spreadsheet and summaries in Appendices [1](#) and [2](#). However, please recognize that the laws in this area are changing rapidly, so you will need to double-check the current accuracy of the Appendices before you rely on them. On a positive note, state laws that have heightened criminal sanctions for trespass on critical infrastructure typically include a notice requirement, meaning liability for trespass occurs when someone has (i) crossed a fence or passed a “no trespassing” sign to get to a sample collection **site** or (ii) received personal notice to leave the premises from the property owner and refused to leave.¹²⁰ Therefore, in those states, you will not be liable for critical infrastructure trespass as long as those situations do not apply to you.

b. Drone Use

The most common and potentially problematic drone privacy statutes prohibit the use of a drone to surveil the operations of critical infrastructure. **Arizona, Arkansas, Delaware, Florida, Kentucky, Louisiana, Nevada, New Jersey, Oklahoma, Oregon, Tennessee, and Texas** each have such a law. Arkansas’s law provides that:

“A person commits the offense of unlawful use of an unmanned aircraft system if he or she knowingly uses an unmanned aircraft system to conduct surveillance of, gather evidence or collect information about, or photographically or electronically record critical infrastructure without the prior written consent of the owner of the critical infrastructure.”¹²¹

While the definition of critical infrastructure varies by state, as discussed above, it generally includes power plants, refineries, public utilities, etc. If the target **site** of your project fits this

¹¹⁹ *Id.* §§ 647(h), 653.20(c).

¹²⁰ *See, e.g.*, Ala. Code § 13A-7-4.3(b).

¹²¹ Ark. Code § 5-60-103(b).

description, you will generally want to avoid the use of a drone to take pictures or video of that **site**.

Some drone privacy laws contain exceptions. The Arkansas statute excerpted above, for example, provides an exception for “[a]n unmanned aircraft system used under a certificate of authorization issued by the Federal Aviation Administration.”¹²² Certificates of authorization, however, are available only to public operators of UAS (*e.g.*, state or local governments).¹²³ A few states, including Louisiana¹²⁴ and Texas,¹²⁵ have exceptions for UAS that are flown by universities for research or educational purposes.

Some drone privacy statutes only impose liability for drone surveillance in furtherance of a criminal offense. Arizona’s for example, states that “[i]t is unlawful for a person to operate or use an unmanned aircraft or unmanned aircraft system to intentionally photograph or loiter over or near a critical facility in the furtherance of any criminal offense.”¹²⁶ Thus, this statute is presumably inapplicable to drone usage around critical infrastructure in Arizona so long as the conduct does not further a criminal offense, such as trespass. There is not yet any court interpretation of the law, however.

8. *Agency Regulations*

Summary: This subsection pertains only to public property, which is managed by different agencies at several levels of government. If your project’s **site** of interest is on public property, you should first identify which agency manages that property. You should then locate that agency’s regulations to identify the permitted uses of that property. Oftentimes, personally contacting the agency is good way to learn about permitted uses of its properties.

If your project’s **site** of interest is on public property (*e.g.*, a National or State Park), you should first identify which agency manages that property. You should then locate that agency’s

¹²² Ark. Code § 5-60-103(a)(2)(B)(v).

¹²³ *Certificates of Waiver or Authorization (COA)*, FEDERAL AVIATION ADMINISTRATION, https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/aaim/organizations/uas/coa/ (last visited Feb. 7, 2019).

¹²⁴ La. Stat. Ann. § 14:337(D)(2).

¹²⁵ Tex. Gov’t Code § 423.002(a)(1).

¹²⁶ Ariz. Rev. Stat. § 13-3729(B).

regulations and policies to identify the permitted uses of that property. Laws, regulations, and policies related to drone use and scientific collection in State Parks are noted in Appendix 2. Some agencies are very permissive with respect to the public's use of their lands. However, as agency regulations and policies evolve, especially with regard to drone use, you should make sure to contact an agency representative for comprehensive and up-to-date guidance.

Many agencies allow collection on public land as long as the land's natural resources are not significantly disturbed or damaged. The Bureau of Land Management, for example, does not require a permit for "casual uses" of the lands it manages.¹²⁷ "Casual use" is defined as "any short term non-commercial activity which does not cause appreciable damage or disturbance to the public lands, their resources or improvements, and which is not prohibited by closure of the lands to such activities."¹²⁸ Thus, if your research does not noticeably damage the Bureau of Land Management's lands, then, you should be able to conduct research on this land without fear of repercussion.

Likewise, the United States Forest Service permits data collection that does not cause appreciable damage. For example, it allows: "[t]he collection of minor forest products, such as flowers, plants, berries, acorns, nuts, or small amounts of medicinal roots, from areas other than designated recreation, research, natural, or other areas closed to such activities. However, such collections are limited to reasonable quantities for personal use; there can be no disturbance of surface resources; and the products must not be protected by Federal or State laws or regulations."¹²⁹

Of course, not all agencies will make guidance materials available to the public, nor will those materials always be clear. In the above excerpted regulation from the Forest Service Manual, for example, you may have questions as to what constitutes "reasonable quantities for personal use" or "disturbance of surface resources." The answers to these questions might affect the extent of sample collection you feel comfortable conducting in national forests. If you encounter any ambiguity like this in your background research, a logical first step is to contact the agency directly for clarification. Generally, an agency's contact information is available on its website. Your

¹²⁷ 43 C.F.R. § 2920.1–2(a).

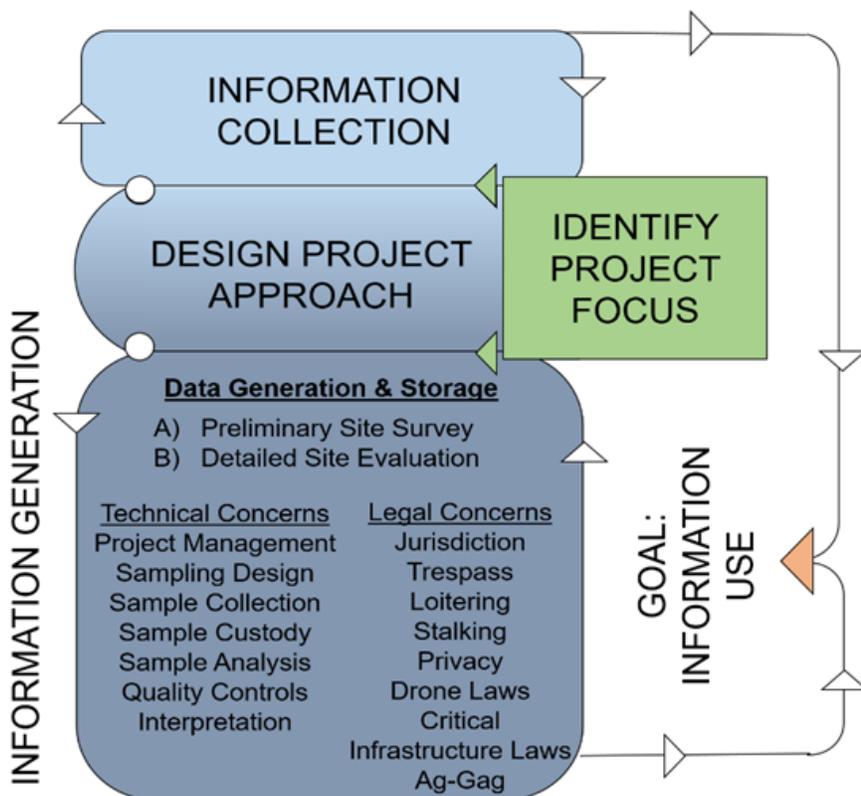
¹²⁸ 43 C.F.R. § 2920.0–5(k).

¹²⁹ FOREST SERVICE MANUAL § 2719(9) (2014), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd52645_5.pdf.

inquiry should be as specific as possible. While the response will not constitute binding legal advice, it will often be the most authoritative feedback you can get on the particular rules governing publicly-held property.

CHAPTER 5: INFORMATION GENERATION – DESIGN OF SAMPLE COLLECTION, SAMPLE ANALYSIS, AND DATA INTERPRETATION METHODOLOGIES

Why You Should Read this Chapter: Most citizen science projects that you join or initiate will require generating information that was previously uncollected, unknown, unreported, or unestablished in the realm of public knowledge. Because most projects will involve this type of “**information generation**,” it is important, and often critical, to your long-term success to think about how you will perform: (i) sample collection (*i.e.*, how will you gather samples of air, water, soil, etc.); (ii) sample analysis (*i.e.*, how will you examine the samples you collect?); and (iii) data interpretation (*i.e.*, how will you interpret the results of your sample analyses?).



Graphic Legend:

Your purpose for generating information might vary over time. For example, you might be interested in performing a preliminary site evaluation before beginning a detailed evaluation. Regardless of your purpose for generating information, it can be helpful to consider various technical concerns that can impact the quality of the information that you generate before you begin your field work.

Introduction

The focus of this chapter is to help you generate high quality information. For some, this may seem like a daunting process. We emphasize that even if it is currently too difficult or expensive for you to comply with the most stringent state or federal quality assurance requirements, any information that you generate can have some use (discussed in [Chapter 2](#)). Indeed, in some instances this information could – and perhaps should – still suffice to trigger agency action. In this way, you can play the critical role of alerting the agency to potential environmental problems and enabling the agency to follow-up by utilizing appropriate **information collection** protocols. Nonetheless, understanding how the design and performance of your project impacts information quality will help assure that your project ultimately meets your goals.

As discussed previously, the use of citizen scientist-generated information can be limited by the information’s quality (discussed in [Chapter 2](#)). At one extreme, state and federal agency regulations require that only high quality information be used to form the underpinnings of their actions (*see* Appendices [1](#) and [2](#)). For example, the Minnesota Pollution Control Agency requires that citizen monitoring data meet the credibility requirements established in its “Volunteer Surface Monitoring Guide” when implementing the state clean water act.¹³⁰ Likewise, many federal regulations include specific requirements to assure information quality. Although these requirements vary in different contexts, EPA-funded programs generally require the preparation of an EPA-approved Quality Assurance Protection Plan (“QAPP”) *before* people begin collecting samples.¹³¹

Ultimately, high quality information has the highest utility or usefulness. Therefore, this discussion explains several technical suggestions that can increase the quality of the information you generate. In particular, we distill general suggestions that the EPA has established to promote

¹³⁰ Minn. Stat. § 114D.20, subd. 3(2).

¹³¹ *See* U.S. ENVTL. PROTECTION AGENCY, CIO 2105.0 (May 5, 2000), <https://www.epa.gov/sites/production/files/2013-10/documents/21050.pdf>; *see also* *Quality Assurance Project Plan for Citizen Science Projects*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/citizen-science/quality-assurance-project-plan-citizen-science-projects> (last visited Feb. 7, 2019).

information credibility and provide you with supplemental resources for additional information. We draw upon public EPA documents including “The Volunteer Monitor’s Guide to Quality Assurance Project Plans,” “The Quality Assurance Template for Citizen Science Projects,” and “Guidance on Choosing a Sampling Design for Environmental Data Collection.”¹³² Other resources, such as the Federal Crowdsourcing and Citizen Science Toolkit,¹³³ are available to aid citizen scientists in the design of sample collection, sample analysis, and data interpretation methodologies.

¹³² See U.S. ENVTL. PROTECTION AGENCY, QUALITY ASSURANCE TEMPLATE FOR CITIZEN SCIENCE PROJECTS (Apr. 2013), [https://www.epa.gov/sites/production/files/2016-06/documents/quality assurance template for citizen science.pdf](https://www.epa.gov/sites/production/files/2016-06/documents/quality_assurance_template_for_citizen_scienc.pdf); U.S. ENVTL. PROTECTION AGENCY, GUIDANCE ON CHOOSING A SAMPLING DESIGN FOR ENVIRONMENTAL DATA COLLECTION, EPA/240/R-02/005 (Dec. 2002), <https://www.epa.gov/sites/production/files/2015-06/documents/g5s-final.pdf>; U.S. ENVTL. PROTECTION AGENCY, THE VOLUNTEER MONITOR’S GUIDE TO QUALITY ASSURANCE PROJECT PLANS, EPA 841-B-96-003 (Sept. 1996), https://www.epa.gov/sites/production/files/2015-06/documents/vol_qapp.pdf [hereinafter “EPA Volunteer Monitor’s Guide to Quality Assurance”].

¹³³ *Federal Crowdsourcing and Citizen Science Toolkit*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/toolkit/#> (last visited Feb. 7, 2019).

Making Connections Between Chapters: Before designing your data collection, sample analysis, or data interpretation methodologies, it is helpful to review key points from the preceding chapters:

- What is your **site** of interest and which pollutant or combination of pollutants will you be examining? (discussed in [Chapter 1](#)).
- Who will use the information you collect and for what purpose? (*e.g.*, what legal standards might limit the use of information you generate) (discussed in [Chapter 2](#)).
- What is known about the pollutant or combination of pollutants you will be examining? (*e.g.*, stability, detection limits, detection methodologies, environmental baseline levels, reporting thresholds, etc.) (discussed in [Chapter 3](#)).
- What is already known about the source of the pollutant of which you are concerned? (*e.g.*, the source's current permit requirements and compliance records) (discussed in [Chapter 3](#)).
- What are potential sources of liability to which you might be exposed when collecting the information (*e.g.*, trespass, stalking, etc.) (discussed in [Chapter 4](#)).

Answering these questions will shed light on the type and quality of information that is currently lacking (*e.g.*, information that you may seek to generate) and how to acquire the information.

Assessing Information Quality

When you present information that you have collected or generated (*e.g.*, a summary of your tests of the water quality in a stream) to a **decision maker**, he or she must assess the quality of the information without having a chance to perform his or her own data collection or testing. Instead, **decision makers** often look for “indicators” of high quality data. Examples include: precision, accuracy, representativeness, completeness, comparability and

Indicators of Quality Data

- 1) *Precision*
- 2) *Accuracy*
- 3) *Representativeness*
- 4) *Completeness*
- 5) *Comparability*
- 6) *Instrumentation*

instrumentation. Therefore, by considering these elements as you design and conduct your project, you will increase both your confidence in the information that the project generates and the ability

of a **decision maker** to consider and rely on your findings. The indicators of quality data are each discussed below.

Precision relates to the degree of agreement (*i.e.*, similarity) between (i) multiple measurements taken from a single sample or (ii) measurements taken from multiple samples collected as close together in time and place as possible. Collecting multiple independent samples from a single **site** at roughly the same time in the same manner (*i.e.*, “replica” samples) and analyzing the samples at the same time and in the same manner, allows for robust statistical calculations of precision (*e.g.*, calculation of standard deviation, standard error, or relative percent difference). A high level of precision suggests that your sampling and testing methods are consistent and can be reproduced; this is an indication of high quality information.

Accuracy ensures that your data represents reality. You can facilitate the measurement of accuracy by collecting quality control samples that have known values. Examples of various quality control samples are discussed in greater detail in the next section of this chapter. Quality control samples should be collected along with, and in ways that mimic your collection of field samples, and they should be analyzed using the same instrumentation. When the values reported from the control samples consistently and precisely reflect their known values, it suggests that the accuracy of your field samples is high; this is an indication of high quality information.

Representativeness relates to whether a sample collected from a **site** is actually representative of that **site**. Here, the central concern is to avoid biases in the generated information. How, when, where, and by whom samples are collected will influence the representativeness of your information. For example, if you are collecting samples to determine the typical concentration of a pollutant in a stream, the following factors could bias your results:

- **How:** the samples were collected with unclean tools. This creates a risk of bias because any pollutant detected in the analysis of the samples may have actually arisen from the unclean tools.
- **When:** the samples were collected just after heavy rainfalls. This may create a risk of bias because various pollutants that are not normally in the river might be washed there from various sources due to the rain. Note: this risk of bias would not be present if rain is typical of the location studied or, alternatively, if you were interested in determining the concentration of a pollutant in a stream following heavy rainfalls.

- **Where:** the samples were collected just below a pipe outfall that is entering the stream. This creates a risk of bias because the concentration of pollutant just below the pipe will be higher than the concentration of pollutant in the stream generally. Note: this risk of bias would not be present if you were interested in determining the concentration of a pollutant just below the pipe or, alternatively, if you were interested in determining the abundance of pollution entering the stream from the pipe.
- **By Whom:** the samples were collected by a person untrained in proper sampling technique. This creates a risk of bias because it will be less certain that the samples were collected properly (*i.e.*, in a way that is representative).

As demonstrated in these examples, what constitutes a bias that impacts representativeness may be different in each situation.

Completeness involves a comparison of the number of measurements you originally planned to collect (*i.e.*, the number that you anticipated would be necessary for the information to be useful) and the number that you actually collected. Collecting more samples than you think will be necessary can help assure information completeness; this is an indication of high quality information.

Comparability refers to the relationship between results of multiple studies or a single study over time. Multiple studies that report similar conclusions suggests that data quality is high. Moreover, information reported from a single study that presents realistic results over time (*e.g.*, consistent, gradual changes, or explainable rapid changes) is of higher quality than information reported from a single study that presents sporadic, unexplained fluctuations in values.

Instrumentation used to analyze the samples you collect can also impact the quality of the generated information. Each analytical instrument has a range of values, such as the amount of a pollutant in a sample, which it can detect in a reliable manner. If the presence of a pollutant in a sample (sometimes referred to as an analyte abundance) is below the instrument's lowest detection limit (*i.e.*, limit of blank, limit of detection, or limit of quantitation) the pollutant's presence will be reported with a value of zero, or less than zero. If the presence of a pollutant in a sample is greater than the instrument's highest quantifiable limit, the pollutant's presence will be reported with a value that is no greater than the instrument's maximum reportable value. As readings approach these detection limits, they become less reliable. In short, if reported values fall within an instrument's measurement range, it suggests that the values are reliable, which is an indication of high quality information.

Information Quality Needs Can Change Over Time: Your anticipated use of the information can change over the lifetime of your project, causing its information quality requirements to increase or decrease (*see* [Chapter 2](#)). Your purpose for collecting data can change over time. For example, your project might originally be directed at monitoring a currently unthreatened natural resource to facilitate a rapid response to any potential increases in pollution. The information quality that you seek may change if a pollution increase is detected.

Likewise, you might perform a general preliminary **site** survey to verify the identity of a potential pollutant or **pollutant source** before performing a detailed **site** evaluation. A preliminary **site** evaluation can include documentation of evidence of: the scent of air at the **site** of interest; oil slicks on the surface of water; stained soil or pavement; stressed vegetation on land or in water; solid waste (*e.g.*, mounds or depressions suggesting solid waste disposal); wastewater entering a stream; or unmaintained septic systems. In some instances, you might collect and analyze a few field samples from the **site** to identify pollutants on the **site**. Perhaps, in this instance, the information quality that you seek will increase after the pollutant or pollutant **site** has been verified.

Ultimately, **information generation** is, in many instances, an iterative process, so the type of information that you seek to generate can change over time.

General Quality Assurance Protection Plan Guidelines

A **Quality Assurance Protection Plan (“QAPP”)** is a formal document that describes how a project will achieve its information quality requirements. In other words, a QAPP lists the quality assurance mechanisms that will be used to assure that the information generated by the project meets the quality criteria discussed above. Importantly, this document is prepared *prior* to any sample collection. Ultimately, the QAPP is a project feature that **decision makers** will use to assess the overall quality of the generated information. Preparing a QAPP is part of a project’s quality assurance (“QA”) activities. (Another term you may see is quality control (“QC”), which refers to the overall system of technical activities that are designed to *measure* the quality of information.)

Prepare or review a project’s QAPP before collecting samples or information. Put your QAPP into a written format that can be shared with volunteers and decision makers.

Although the EPA lists twenty-four distinct issues that can be addressed in a QAPP, we focus here on various themes that we deem especially important and useful in the context of citizen science projects: (i) management description, (ii) sampling design, (iii) sample collection methodology, (iv) sample handling and custody, (v) sample analysis, (vi) quality controls, and (vii) data interpretation.¹³⁴ We stress that the nature or type of pollutant and the **pollutant source** heavily dictate the content of the QAPP. The EPA has issued a vast number of very specific and detailed protocols for the measurement of pollutants in various contexts (*i.e.*, “EPA Reference Methods” or “EPA Standard Protocols”). A collection of these methods and protocols can be found on EPA’s website.¹³⁵ They delineate detailed descriptions of accepted sampling methodologies, quality controls, instrumentation functionalities, etc. Including this level of detail here is impractical. Instead, we offer broad, generalizable suggestions and provide additional resources for those who seek greater detail for their individual project needs.¹³⁶

Key elements of QAPPs

- 1. Management description*
- 2. Sampling design*
- 3. Sampling collection*
- 4. Sample handling & custody*
- 5. Sample analysis*
- 6. Quality controls*
- 7. Data interpretation*

¹³⁴ See EPA Volunteer Monitor’s Guide to Quality Assurance, *supra* note 132, at 23.

¹³⁵ *Collection of Methods*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/measurements/collection-methods> (last visited Feb. 7, 2019).

¹³⁶ *Id.*

9. *Project Management Description*

While some projects are small enough that a single person can successfully complete them, many will require the coordinated efforts of many individuals. Indeed, the most successful projects may involve a “community” of individuals. When projects involve groups of individuals, establishing and describing management roles at the onset of the project is important for ensuring project consistency and cohesiveness.

Project managers must (among many other responsibilities): (i) identify funding resources and control expenditures of funds; (ii) establish what, when, how, and by whom samples will be collected, analyzed, and interpreted; (iii) ensure that volunteers understand how to clean and calibrate instrumentation; and (iv) assure, if needed, the proper training of those involved in the project (*e.g.*, in proper sample collection) and otherwise ensure information quality.

Project managers should also seek to maximize the use of community expertise. For example, even if you lack the training or expertise to design or complete a project, your community may include individuals with technical or scientific training who are willing and eager to participate (*e.g.*, teachers or professors, scientists and engineers, or even members of environmental agencies).

10. *Sampling Design*

Sampling design includes considering the types of samples that will be collected and when and where they will be collected. Sampling design decisions implicate multiple factors that impact information quality, but it is primarily concerned with the representativeness of the information. A well-developed sampling design plays a central role in ensuring that conclusions are adequately supported by data. Thinking about your sampling design at the beginning of a project can help avoid introducing bias at the onset of **information generation**. Avoiding bias is important; as the saying goes, “Garbage in, is garbage out.”

In some aspects, your sampling design will be dependent on the type of sample you are collecting. For example, the placement of air monitors depends on the sampling objective: ground level monitoring, air mass (*i.e.*, circulating air), or source-oriented (*e.g.*, as the air exist a smoke stack), and it is important for air flow around the monitor to be representative of the general air flow in the area to prevent sampling bias. Likewise, water and soil sampling designs can include details concerning the location and depth at which samples will be collected. When contemplating

the types of samples that will be collected, you should consider the chemical/physical properties of the pollutant and the potential source of the pollutant (discussed in [Chapter 3](#)).

The sampling design should include documentation of when and where samples will be collected, including, for example, the following types of information:

- The number of times that a sample will be collected per week, month or year;
- The duration of the sampling program (*e.g.*, the period of time during which samples will be collected);
- At what time of the day or night the samples will be taken (*e.g.*, during or after an industrial facility's hours of operation);
- How weather will impact sample collection (*e.g.*, will samples be collected during rain, wind, or unusual temperature events); and
- Where samples will be collected. The chemical/physical properties of the pollutant and the source of the pollutant, along with potential sources of liability (discussed in [Chapter 3](#)), should be central to determinations of where to collect samples.

Addressing these issues will help reduce potential bias in the ultimate conclusions and promote the quality of the information generated in a project.

Selecting sampling **locations** typically involves one of two approaches: (i) random or probabilistic sampling and (ii) judgmental sampling. While each approach has advantages and disadvantages that can be discussed at length, this discussion merely serves to introduce the topics. In random sampling, as its name implies, sampling locations are chosen randomly. It is most useful when the pollutant of interest is relatively homogeneous in the sampling medium (*i.e.*, it is uniformly distributed, and thus, there are no expected "hot spots"). Because citizen science projects concerned with environmental problems often focus on a **pollutant source**, random sampling may be less commonly used relative to judgmental sampling. Judgmental sampling, as its name implies, involves the selection of sampling locations based on judgment. Judgmental sampling is most useful when there is historical or physical knowledge of the feature or condition under investigation: for example, when the impact of the pollutant can be visually discerned or when the location of pollutant release is known.

Ultimately, the sampling design should match the needs of the project with the resources available (*e.g.*, recognizing constraints of resources related to finances, time, expertise, and geographic access).

11. Sample Collection Methodology

A well-designed sample collection methodology helps ensure the precision and accuracy of the information that is ultimately generated. The primary question addressed by a sample collection methodology is: how will samples be collected during each sampling event (*e.g.*, site visit)? The answer to this question may include, among other things, a description of: (i) the number of samples to be collected during each sampling event (*i.e.*, the number of “replica” samples that will be collected); (ii) how samples will be taken; (iii) the equipment and containers used to collect the samples (*e.g.*, their composition and procedures for their decontamination); and (iv) holding time length (*i.e.*, the time between taking samples and analyzing them).

Some aspects of sample collection methodologies are highly generalizable across projects. For example:¹³⁷

- Sample collection should be documented (*e.g.*, time, place, name of collector, equipment used, etc.).
- The collector should wear “a clean pair of new, non-powdered, disposable gloves each time a different location is sampled and the gloves should be donned immediately prior to sampling. The gloves should not come in contact with the media being sampled and should be changed any time during sample collection when their cleanliness is compromised.”¹³⁸
- The collection equipment should be clean and sterilized.
- “Sample collection activities shall proceed progressively from the least suspected contaminated area to the most suspected contaminated area.”¹³⁹ Samples that are expected to contain high levels of contaminated media should be kept separate from samples thought to contain low levels of contaminated media.

¹³⁷ See, *e.g.*, U.S. ENVTL. PROTECTION AGENCY REGION 4, SESD OPERATING PROCEDURE: SOIL SAMPLING, SESDPROC-300-R3 (Aug. 2014), <https://www.epa.gov/sites/production/files/2015-06/documents/Soil-Sampling.pdf> [hereinafter, “EPA Soil Sampling Procedure”]; U.S. ENVTL. PROTECTION AGENCY REGION 4, SESD OPERATING PROCEDURE: SURFACE WATER SAMPLING, SESDPROC-201-E3 (Feb. 2013), <https://www.epa.gov/sites/production/files/2015-06/documents/Surfacewater-Sampling.pdf> [hereinafter, “EPA Water Sampling Procedure”]; U.S. ENVTL. PROTECTION AGENCY REGION 4, SESD OPERATING PROCEDURE: PORE WATER SAMPLING, SESDPROC-513-R2 (Feb. 2013), https://www.epa.gov/sites/production/files/2017-07/documents/pore_water_sampling513_af.r3.pdf; U.S. ENVTL. PROTECTION AGENCY REGION 4, SESD OPERATING PROCEDURE; GROUNDWATER SAMPLING, SESDPROC-301-R3 (Mar. 2013), <https://www.epa.gov/sites/production/files/2015-06/documents/Groundwater-Sampling.pdf>.

¹³⁸ See, *e.g.*, EPA Soil Sampling Procedure, *supra* note 137, at 8.

¹³⁹ See, *e.g.*, *id.*

- “All . . . control samples shall be collected and placed in separate ice chests or shipping containers.”¹⁴⁰
- “During sample collection, if transferring the sample from a collection device, make sure that the device does not come in contact with the sample containers.”¹⁴¹
- “All samples requiring preservation must be preserved as soon as practically possible, ideally immediately at the time of sample collection.”¹⁴²

Other aspects of a project’s sample collection methodology may be specific to the medium being sampled or type of instrument being used. For example, air sample collection methodologies are generally highly specific to the instrumentation used.¹⁴³ Water and soil sampling designs, however, have various aspects that are more generalizable.

Water samples should be collected with as little agitation to the water as possible. Wading or streamside sampling increases the probability of agitation. In instances when agitation is a concern, samples should be collected while facing upstream. Moreover, water sample containers should be filled to their capacity (*i.e.*, no bubbles or headspace should be present after the container is capped). Unpreserved and preserved samples have holding times of one week and two weeks, respectively. (Holding times indicate the period during which the samples should be tested.)

Soil samples must be “thoroughly mixed to ensure that the sample is as representative as possible of the sample media;” this rule does not apply if the soil sample will be analyzed for the presence of volatile organic compounds (“VOCs”).¹⁴⁴ Moreover, the collector should “place the sample into an appropriate, labeled container(s) by using the alternate shoveling method and secure the cap(s) tightly. The alternate shoveling method involves placing a spoonful of soil in each container in sequence and repeating until the containers are full or the sample volume has been exhausted.”¹⁴⁵ Unpreserved samples have a forty-eight-hour holding time.¹⁴⁶

¹⁴⁰ See, *e.g.*, EPA Water Sampling Procedure, *supra* note 137, at 7.

¹⁴¹ See, *e.g.*, *id.* at 8.

¹⁴² See, *e.g.*, *id.*

¹⁴³ See, *e.g.*, U.S. ENVTL. PROTECTION AGENCY, LIST OF DESIGNATED REFERENCE AND EQUIVALENT METHODS (Dec. 2018), https://www.epa.gov/sites/production/files/2018-12/documents/amtic_list_dec_2018_update_1.pdf [hereinafter, “EPA List of Designated Reference and Equivalent Methods”].

¹⁴⁴ See EPA Soil Sampling Procedure, *supra* note 137, at 8.

¹⁴⁵ *Id.* at 9.

¹⁴⁶ *Id.* at 12.

Sample collection methodologies may also contemplate other ways of documenting sample collection. For example, a methodology could direct volunteers to photograph, videotape, or otherwise record the actual sample collection to demonstrate that the activity complies with the sample collection methodology. Typically, notes of visual and olfactory observations should be recorded in a log book to describe, for example, the depth of each sample, whether its color and texture, any odors, etc. The log can also be used for demonstrating sample handling and custody and any field analyses of the samples.

12. *Sample Handling and Custody*

Precision and accuracy are the main information quality concerns addressed by the establishment of sample handling procedures. These procedures apply to projects that do not perform sample analysis in the field. In these instances, the samples must be transported to an alternative **site**, such as a laboratory. All samples should be properly labeled including: (i) the sample location; (ii) the date and time of collection; (iii) the sampler's name; and (iv) whether the sample was preserved, and if so, how. Chain-of-custody procedures should be established to keep track of all samples that will be shipped or transported to a laboratory for analysis (*i.e.*, documentation requirements for any changes in the handler of the sample or the sample's storage location). This information is important for authentication of any information generated by analysis of the samples (discussed in [Chapter 2](#)).

13. *Sample Analysis*

Analysis of samples may occur in the field or in a laboratory. In either case, the analytical methods and equipment used in the analysis should be documented. For example, if an EPA Reference Method or approved protocol is used, the method/protocol number should be listed; if the methodology differs from the Reference Method or approved protocol, list the ways in which it differs. In addition, documentation of instrumental calibration, inspection and maintenance should be provided. These procedures promote precision and accuracy of the data.

Generally, analytical tools that are EPA approved are documented in the Federal Register. In some instances, the EPA provides lists of analytical tools that are EPA-approved when used in specific contexts.¹⁴⁷ Other EPA approved devices can be found in EPA-approved operating procedures or reference methods (*see* [Appendix 5](#)).

¹⁴⁷ *See, e.g.*, EPA List of Designated Reference and Equivalent Methods, *supra* note 143.

14. *Quality Control Samples*

The design of a project should include methods for collecting and testing quality control samples; examples include field controls, equipment controls, split samples, replica samples, and spiked samples.

- A field control is a sample “collected” in the field that lacks a detectable quantity of the analyte of interest (*i.e.*, the pollutant). While regular sample containers are filled with air, water, or soil from the field, a field control is filled in the same way but with air, water, or soil with a known composition that is brought to the **site**. If preservation steps are performed to the field samples, they should likewise be performed on the field control sample.
- Equipment controls are samples used to verify the cleanliness of sample collection or analysis equipment. Generally, distilled water is used to test equipment’s cleanliness.
- A split sample is one that is divided into two or more sample containers and subsequently analyzed independently.
- Replica samples or duplicate samples are samples that are collected and analyzed at the same time and in tandem (*i.e.*, they are representative of the same environmental condition).
- Spiked samples are samples to which a known amount of the analyte has been added.

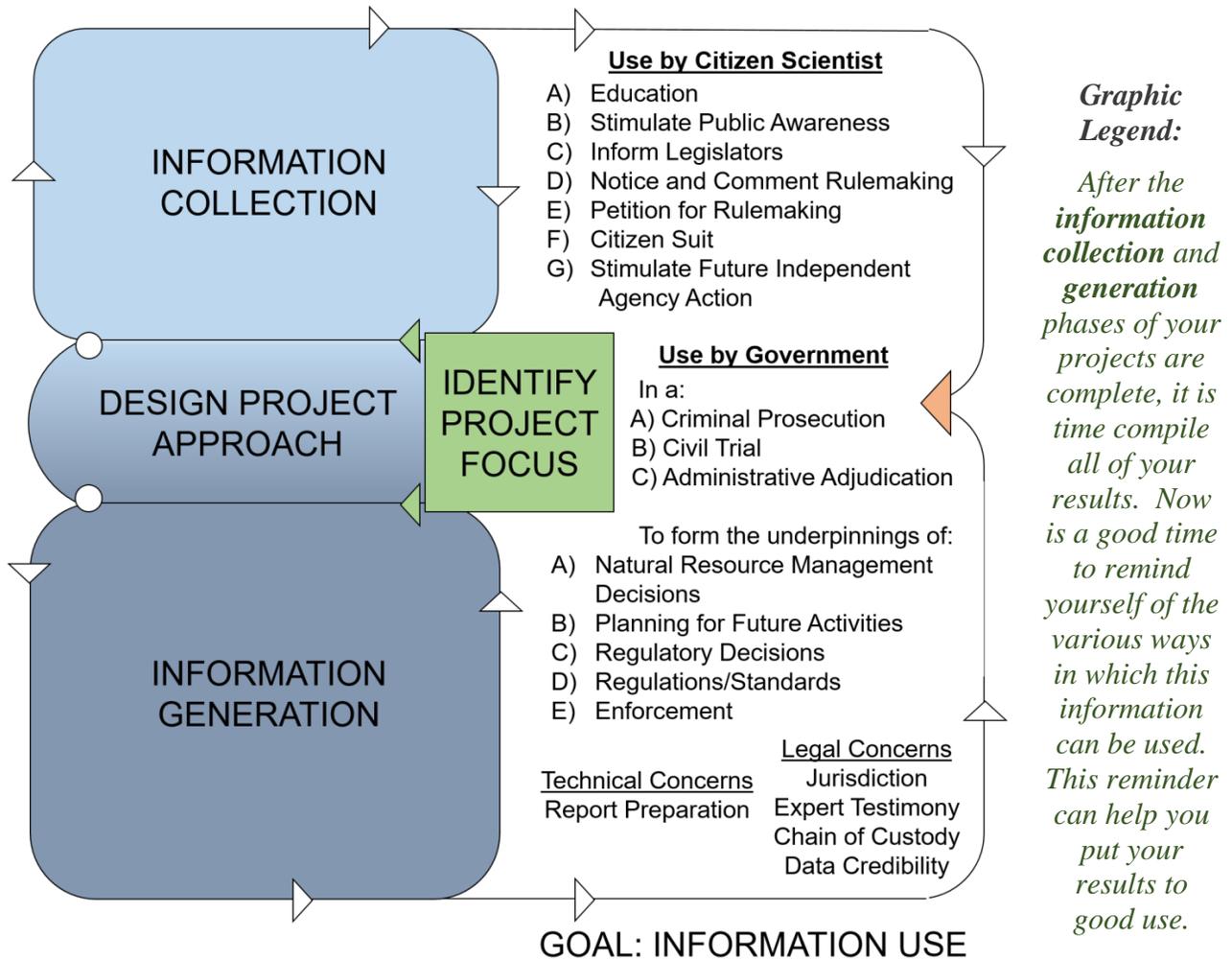
Because the abundance of the analyte (*i.e.* pollutant) is known in each of these control samples, they are useful in assessing the precision and accuracy of the data that is ultimately generated.

15. *Data Interpretation*

The project design should include considerations of how the data generated from sample analysis will be interpreted. It is from this interpretation that conclusions will be drawn. In some instances, you, the citizen scientist, may be able to interpret the data. However, as mentioned in [Chapter 2](#), some uses of information generated from your project will require expert interpretation. When data is interpreted by a qualified expert, the quality of the information is enhanced. There are likely to be qualified experts in your community who are willing to assist you. Think about universities, community colleges, high schools, and locally-based environmental engineering companies.

CHAPTER 6: INFORMATION USE – MAKING THE MOST OUT OF YOUR INFORMATION

Why You Should Read this Chapter: After all your efforts in carrying out your project, you should put your results to good use. Here we provide suggestions concerning the presentation and sharing of your information.



General Suggestions

After you, the citizen scientist, have put forth the effort to identify the problem (discussed in [Chapter 1](#)), to collect currently available public information (discussed in [Chapter 3](#)), and to generate new information (discussed in [Chapter 5](#)), you should put the results of your efforts to good use. As delineated in [Chapter 2](#), there is a broad spectrum of potential uses of your information (e.g., to stimulate public awareness, to influence lawmaking, for enforcement

mechanisms, etc.). There are various ways to make the most out of your information. Here, we provide a few suggestions.

First, structure your information to make it presentable. Begin by considering ways in which you can present your work concisely and clearly to a broad audience. In many instances, simplicity empowers an argument. Translate your results into plain language and use graphs, tables, and other visualization techniques to facilitate emphasis and rapid understanding of your arguments. Next, consider your primary target audience. In some instances, this audience will require that the information be submitted in a certain format (*e.g.*, documents submitted for court proceedings). Take time to research whether your **information use** has a formatting requirement. Importantly, when in doubt, seek outside advice and guidance.

Second, use your information in any way you can. Although you may have begun your work as a citizen scientist with a specific use or goal in mind, consider other ways in which your information can be used. Maximize the value of your efforts by thinking creatively about other uses of your information.

Finally, build upon the information that you have collected and generated. In some instances, you can consider collecting or generating more information to make your argument more sound and convincing with increased evidence. In other instances, your work may bring to light additional issues that merit exploration. Alternatively, you can provide opportunities for others to build upon your work by making your information as accessible as possible. For example, you can consider making your information publicly available on an internet platform. To some extent, this sharing can serve as a “peer-reviewing” mechanism. When other independent individuals reproduce your results, the credibility (*i.e.*, quality) of your information increases. In this way, quantity can be equated with quality.

APPENDICES

Appendix I: State Law Analysis Overview

Ongoing Projects	Collection of Information ¹			Trespass Laws		Drone Laws		Critical Infrastructure Laws		Stalking Laws		Use of Information				
	Does the State have ongoing projects (federal or state level) that are open for public involvement?	Does the State have laws that explicitly allow the collection of information?	Does the State have laws that explicitly prohibit the collection of information?		Does the State impose criminal liability for trespass despite lack of notice?	Does the State have other trespass provisions that impact citizen scientists?	Does the State have drone laws that impact citizen scientists?	Are there exceptions to the drone laws that may help citizen scientists?	Does the State have trespass laws regarding critical infrastructure?	Does the State have drone laws regarding critical infrastructure?	Does the State have criminal stalking laws that impact citizen scientists?	Does the State have civil stalking laws that impact citizen scientists?	Does the State have laws that explicitly allow the use of information?	Does the State have laws that explicitly prohibit the use of information?	Does the State have laws that impose information credibility requirements?	Does the State have laws that impose evidentiary standards?
AL	Y			Y	N	Y	N	N/A	Y	N	Y	N				Y
AK	Y		Y		N	Y	Y	N/A	N	N	Y	N		Y*		Y
AZ	Y			Y	N	Y	Y	N	Y (Loiter)	Y	Y	N				Y
AR	Y			Y	N	Y	Y	N	Y	Y	Y					Y
CA	Y			Y	N	Y	Y	N	Y (Loiter)	Y	Y					Y
CO	Y				Y	Y	Y	N/A	N	N	Y	N	Y			Y
CT	Y				N	Y	Y	N/A	N	N	Y	N				Y
DE	Y				N	Y	Y	Y	N	Y	Y	N				Y
FL	Y			Y	N	Y	Y	Y	Y	Y	Y	N		Y*		Y
GA	Y			Y	N	Y	Y	N/A	N	N	Y	N				Y
HI	Y				N	Y	Y	N/A	N	N	N	N				Y
ID	Y			Y	N	Y	Y	N	N	N	Y	N				Y
IL	Y			Y	N	Y	Y	N	N	N	Y	N	Y			Y
IN	Y	Y	Y		N	Y	Y	N	Y	N	Y	N	Y			Y
IA	Y			Y	N	Y	N	N/A	Y	N	Y	N		Y*	Y	Y
KS	Y			Y	N	Y	Y	N/A	N	N	Y	N				Y
KY	Y			Y	N	Y	Y	Y	Y	Y	Y			Y*		Y
LA	Y			Y	Y	Y	Y	Y	Y	Y	Y	N				Y
ME	Y				N	Y	Y	N/A	N	N	Y	N				Y
MD	Y				N	Y	Y	N/A	N	N	Y	N				Y
MA	Y			Y	N	Y	Y	N/A	N	N	Y	N	Y			Y
MI	Y	Y			N	Y	Y	N	Y	N	Y	Y	Y			Y
MN	Y	Y			N	Y	Y	N/A	Y	N	Y	N	Y		Y	Y
MS	Y			Y	N	Y	N	N	N	N	Y	N				Y
MO	Y			Y	N	Y	N	N/A	N	N	Y	N				Y
MT	Y			Y	N	Y	Y	N	N	N	Y	N	Y (Supreme Court)	Y*		Y
NE	Y				N	Y	Y	N/A	Y	N	Y	Y		Y*		Y
NV	Y				N	Y	Y	Y	N	Y	Y	N				Y
NH	Y	Y		Y	N	N	Y	N	N	N	Y	N	Y			Y
NJ	Y	Y			N	Y	Y	N	Y	Y	Y	N	Y			Y
NM	Y				N	N	Y	N/A	N	N	Y	N	Y			Y
NY	Y	Y			N	N	Y	N/A	N	N	Y	N	Y			Y
NC	Y			Y	N	Y	Y	N	Y	N	Y	N		Y*		Y
ND	Y			Y	N	Y	Y	Y	N	N	Y	N	Y		Y	Y
OH	Y			Y	N	Y	Y	N/A	N	N	Y	N			Y	Y
OK	Y	Y		Y	N	Y	Y	Y	N	Y	Y	N	Y			Y
OR	Y			Y	N	Y	Y	Y	N	Y	Y	Y	Y			Y
PA	Y			Y	N	Y	Y	Y	N	N	Y	N	Y			Y
PR	Y				N	N	N	N/A	N	N	Y	N			Y	Y
RI	Y	Y			N	N	Y	N/A	N	N	Y	Y	Y			Y
SC	Y			Y	N	Y	N	N/A	N	N	Y	N	Y			Y
SD	Y			Y	N	Y	Y	Y	N	N	Y	Y	Y		Y	Y
TN	Y			Y	Y	Y	Y	Y	N	Y	Y	Y		Y*		Y
TX	Y				N	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y
UT	Y			Y	Y	Y	Y	N	N	N	Y	N	Y			Y
VT	Y			Y	N	N	Y	N/A	N	N	Y	N	Y	Y*		Y
VA	Y				N	Y	Y	Y	N	N	Y	Y	Y		Y	Y
WA	Y	Y			N	N	Y	N/A	N	N	Y	Y	Y		Y	Y
WV	Y			Y	N	N	Y	N	N	N	Y	N	Y		Y	Y
WI	Y	Y			Y	Y	Y	N	Y	N	Y	N	Y			Y
WY	Y		Y		Y	Y	Y	N	N	N	Y	Y	Y*		Y	Y

¹ For the purposes of this chart, the term "information" is expansive, and includes any type of data or media that could be collected by a citizen scientist, including, but not limited to, photographs, video, audio, air quality samples, and water quality samples.

*Prohibition extends only to illegally collected information.

Appendix II: Individual State Law Summaries

Alabama	
Ongoing Projects:	
Federal Project(s) Operating in the State:	<p>In 1995, the South Alabama Regional Planning Commission developed a nomination package for Mobile Bay’s inclusion in the U.S. Environmental Protection Agency’s (“EPA”) National Estuary Program. <i>See Our History</i>, MOBILE BAY NAT’L ESTUARY PROGRAM, http://www.mobilebaynep.com/who_we_are/our_history/ (last visited Feb. 7, 2019). EPA Administrator Carol Browner accepted the submission, convened a Management Conference, and created the Mobile Bay National Estuary Program (“MBNEP”). <i>See id.</i> As an EPA-funded non-profit, MBNEP uses volunteers to conduct water quality monitoring using Alabama Water Watch (“AWW”) test kits and protocols, conduct windshield surveys to assess nearby habitat condition, and upload data to the Water Rangers online database. <i>See MBNEP VOLUNTEER WATER QUALITY MONITORING: A HOW-TO GUIDE FOR COASTAL ALABAMA</i> (May 2017), http://www.mobilebaynep.com/images/uploads/library/Volunteer_WQM_Guide_narrative_final2017_08.pdf; <i>MBNEP Receives \$488,711 Grant to Implement Trash-Free Waters</i>, MOBILE BAY NAT’L ESTUARY PROGRAM (Dec. 5, 2017), http://www.mobilebaynep.com/news/mbnep_receives_488711_grant_to_implement_trash_free_waters (Grant from EPA’s Gulf of Mexico Program); <i>EPA Awards Grant to Mobile Bay National Estuary Program: Protecting Natural Resources and Strengthening Local Economies</i>, U.S. ENVTL. PROTECTION AGENCY (May 15, 2017), https://www.epa.gov/newsreleases/epa-awards-grant-mobile-bay-national-estuary-program-protecting-natural-resources-and.</p>
State Project(s):	<p>The Alabama Department of Conservation and Natural Resources has created or is participating in several citizen science iNaturalist projects: Alabama Gopher Tortoise Conservation Project; Alabama Gopher Tortoise Road Mortality Project; Eastern Spotted Skunk; and Alabama State Parks. <i>See Alabama iNaturalist Projects</i>, ALA. DEP’T OF CONSERVATION & NAT. RESOURCES, https://www.outdooralabama.com/adult-conservation-programs/alabama-inaturalist-projects (last visited Feb. 7, 2019).</p> <p>The University of Alabama’s Museum of Natural History also manages several citizen science projects through iNaturalist: Biodiversity of Alabama; Moundville Archaeological Park Biodiversity Survey; University of Alabama Arboretum Biodiversity Survey; and University of Alabama Campus Biodiversity Survey. <i>See Citizen Science Programs</i>, ALA. MUSEUM OF NAT.</p>

	HIST., https://almnh.museums.ua.edu/programs/citizen-science-programs/ (last visited Feb. 7, 2019).
Collection of Information:	
Ag-Gag Law:	<p>“It shall be unlawful for any person to do any of the following:</p> <p>(3) Obtain access to an animal or crop facility by false pretenses for the purpose of performing acts not authorized by that facility.</p> <p>(5) Knowingly obtain control by theft or deception that is unauthorized, or to exert control that is unauthorized over any records, data . . . for the purpose of depriving the rightful owner or facility of records, . . . data . . .</p> <p>(6) Possess or use records, . . . data, . . . in any way to copy or reproduce records or data of an animal or crop facility knowing or reasonably believing that the records, . . . data, . . . have been obtained by theft or deception, or without authorization of the rightful owners or administrators of the animal or crop facility.</p> <p>(7) Enter or remain on an animal or crop facility with the intent to commit an act prohibited under this section.” Ala. Code § 13A-11-153.</p> <p>A violation of this section is a Class C felony¹⁴⁸ if the loss is \$250 or more, or a Class A misdemeanor¹⁴⁹ if the loss is less \$250. <i>Id.</i> § 13A-11-154.</p>
Scientific Collecting Permits:	<p>“A Scientific Collecting Permit is required of any individual, agency, or educational institution that plans to collect or survey any wild invertebrate or vertebrate species or their eggs in Alabama for propagation or scientific purposes.” <i>Nongame Wildlife Program</i>, ALA. DEP’T OF CONSERVATION & NAT. RESOURCES, https://www.outdooralabama.com/wildlife/nongame-wildlife-program (last visited Feb. 7, 2019); <i>see also</i> Ala. Admin. Code 220-2-.92 (Protected Nongame Species); <i>id.</i> 220-2-.98 (Invertebrate Species Regulation).</p>
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No. “A person is guilty of criminal trespass in the third degree when he <i>knowingly</i> enters or remains unlawfully in or upon premises.” Ala. Code § 13A-7-4(a)(emphasis added). A person is not liable for criminal trespass if she enters “unimproved, apparently unused land, . . . neither fenced nor otherwise enclosed . . . unless notice against trespass . . . is given” by signs posted on the property or is communicated personally by the owner. <i>Id.</i> § 13A-7-1(3).</p>
Surveillance Law:	<p>“A person commits the crime of criminal surveillance if he intentionally engages in surveillance while trespassing in a private place.” Ala. Code § 13A-11-329(a).</p>

¹⁴⁸ A Class C felony is punishable by a maximum fine of \$15,000 and/or imprisonment not to exceed 10 years. Ala. Code § 13A-5-6(a)(3) (Prison terms); *id.* § 13A-5-11(a)(3) (Fines).

¹⁴⁹ A Class A misdemeanor is punishable by a maximum fine of \$6,000 and/or imprisonment not to exceed 1 year. *See* Ala. Code § 13A-5-7(a)(1) (Prison terms); *id.* § 13A-5-12(a)(1) (Fines).

	Criminal surveillance is a Class B misdemeanor ¹⁵⁰ . <i>Id.</i> § 13A-11-32(b).
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Trespass Law:	<p>“A person commits the crime of unauthorized entry of a critical infrastructure if the person does any of the following:</p> <p>(1) Intentionally enters without authority into any structure or onto any premises belonging to another that constitutes in whole or in part a critical infrastructure that is completely enclosed by any type of physical barrier or clearly marked with a sign or signs that are posted in a conspicuous manner and indicate that unauthorized entry is forbidden.</p> <p>....</p> <p>(3) Remains upon or on the premises of a critical infrastructure after having been forbidden to do so, either orally or in writing, by any owner, lessee, or custodian of the property or by any other authorized person.</p> <p>(4) Intentionally enters into a restricted area of a critical infrastructure which is marked as a restricted or limited access area that is completely enclosed by any type of physical barrier when the person is not authorized to enter the restricted or limited access area.” Ala. Code § 13A-7-4.3(b).</p> <p>Trespass against “critical infrastructure” carries a heightened penalty as a Class A misdemeanor. <i>Id.</i> § 13A-7-4.3(c).</p> <p>Critical infrastructure “includes, but is not limited to,” facilities that manufacture, store, process, treat, or transmit chemicals, oil, gas, electricity, and water. <i>Id.</i> § 13A-7-4.3(a)(1).</p>
Stalking Laws:	
Criminal Stalking:	<p>“(a) A person who, acting with an improper purpose, intentionally and repeatedly follows, harasses, telephones, or initiates communication, verbally, electronically, or otherwise, with another person, any member of the other person's immediate family, or any third party with whom the other person is acquainted, and causes material harm to the mental or emotional health of the other person, or causes such person to reasonably fear that his or her employment, business, or career is threatened, and the perpetrator was previously informed to cease that conduct is guilty of the crime of stalking in the second degree.” Ala. Code § 13A-6-90.1 (Stalking in the second degree).</p>
Use of Information:	

¹⁵⁰ A Class B misdemeanor is punishable by a maximum fine of \$3,000 and/or imprisonment not to exceed 6 months. *See* Ala. Code § 13A-5-7(a)(2) (Prison terms); *id.* § 13A-5-12(a)(2) (Fines).

Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground to support” the claim. Ala. R. Civ. P. 11(a).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Ala. R. Evid. 901(a).
Expert Testimony:	Alabama Rule of Evidence 702 and <i>Daubert</i> standard for DNA evidence/ <i>Frye</i> standard for scientific evidence in civil cases. <i>See Bagley v. Mazda Motor Corp.</i> , 864 So. 2d 301, 310 (Ala. 2003); <i>see also Courtaulds Fibers, Inc. v. Long</i> , 779 So. 2d 198, 202 (Ala. 2000); <i>Turner v. State</i> , 746 So. 2d 355, 358-61 (Ala. 1998).

Alaska



Ongoing Projects:

Federal Project(s) Operating in the State: Alaska Sea Grant (“ASG”) is part of the College of Fisheries and Ocean Sciences at the University of Alaska Fairbanks and part of the National Sea Grant Program, a division of the National Oceanic and Atmospheric Administration (“NOAA”). *See Citizen Science*, ALASKA SEA GRANT, <https://alaskaseagrant.org/research/citizen-science/> (last visited Feb. 7, 2019). ASG funds and coordinates citizen science projects in Alaska along with other groups. *See id.*; *see also Alaska Community-Based Monitoring*, ALASKA OCEAN OBSERVING SYSTEM, <http://aocs.org/alaska-community-based-monitoring/> (last visited Feb. 7, 2019); MARILYN SIGMAN, ED., ASG, COMMUNITY-BASED MONITORING OF ALASKA’S COASTAL AND OCEAN ENVIRONMENT (2015), https://alaskaseagrant.org/wp-content/uploads/2017/10/CBM-Best-Practices_web.pdf.

The University of Alaska has established a program called the Alaska Center for Unmanned Aircraft Systems Integration (“ACUASI”) “to maintain a world class research center for unmanned aircraft systems, providing integration of unique payloads and supporting pathfinder missions within government and science communities, with a special emphasis on the Arctic and sub-Arctic regions.” *About Us*, ACUASI U. OF ALASKA FAIRBANKS, <http://acuasi.alaska.edu/about> (last visited Feb. 7, 2019); *see also* Alaska Stat. § 14.40.082 (“The University of Alaska may establish a training program in the operation of unmanned aircraft systems.”). The program was selected as a test site by the Federal Aviation Administration in 2013. *About Us*, ACUASI U. OF ALASKA FAIRBANKS, <http://acuasi.alaska.edu/about> (last visited Feb. 7, 2019). Past missions have included a survey of arctic tundra vegetation, a survey of seas grass and sea otters in Homer, Alaska, a walrus survey, and a sea ice survey. *Past Missions*, ACUASI U. OF ALASKA FAIRBANKS, <http://acuasi.alaska.edu/missions> (last visited Feb. 7, 2019).

State Project(s): The Alaska Department of Fish and Game’s Citizen Science Program is a partnership between members of the public and professional scientists, which provides opportunities for interested individuals to assist wildlife biologists in collecting important data as part of ongoing research projects and conservation planning. *See Alaska Citizen Science Program*, ALASKA DEP’T OF FISH & GAME, <http://www.adfg.alaska.gov/index.cfm?adfg=citizenscience.main> (last visited Feb. 7, 2019).

Collection of Information:

Trespass Related to Geotechnical Surveys and Mining: “A person who trespasses upon the land of another to gather geotechnical data . . . is liable to the owner for treble the amount of damages that may be assessed in a civil action.” Alaska Stat. § 09.45.735. If the trespass was unintentional, however, only actual damages may be recovered. *Id.*

Scientific Permit:	“[R]esearchers who wish to capture, collect, or repeatedly disturb wild Alaska mammals, birds, or reptiles for scientific purposes need a scientific permit. They will also need to submit annual reports about their activities to [the Alaska Department of Fish and Game].” <i>Mammal, Bird & Reptile Permits - Scientific Permits</i> , ALASKA DEP’T OF FISH & GAME, http://www.adfg.alaska.gov/index.cfm?adfg=otherlicense.collection (last visited Feb. 7, 2019).
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. A person commits the crime of criminal trespass in the second degree if the person enters or remains unlawfully... in or upon premises. Alaska Stat. § 11.46.330(a)(1). However, a person is not liable for trespass if she enters “unimproved and apparently unused land, which is neither fenced nor otherwise enclosed . . . unless notice against trespass is given” by signs posted on the property or personally by the owner. <i>Id.</i> § 11.46.350(b).
Other Provisions:	<i>See supra</i> “Trespass Related to Geotechnical Surveys and Mining.”
Drone Laws:	
Preemption:	“A municipality may not adopt an ordinance that permits the release of images captured by an unmanned aircraft system in a manner inconsistent with AS 18.65.903 [<i>see infra</i> “Use of Information”].” Alaska Stat. § 29.35.146(a).
Drone Use Prohibited in Chugach State Park:	The use of drones is prohibited in Chugach State Park. <i>See</i> Alaska Admin. Code tit. 11, § 20.020(a); <i>Flying Drones Prohibited in Chugach State Park</i> , ALASKA DEP’T OF NAT. RESOURCES, http://dnr.alaska.gov/parks/units/chugach/drones (last visited Feb. 7, 2019); <i>see also</i> Alaska Admin. Code tit. 11, § 20.855; <i>id.</i> § 20.983.
Stalking Laws:	
Criminal Law:	“A person commits the crime of stalking in the second degree if the person knowingly engages in a course of conduct that recklessly places another person in fear of death or physical injury, or in fear of the death or physical injury of a family member.” Alaska Stat. § 11.41.270(a).
Use of Information:	
Although our research is incomplete, this provision could be construed to prohibit the use of information collected by citizens.	
Explicitly Prohibits:	“A law enforcement agency may not retain images captured by an unmanned aircraft system unless retention of the image is required (1) as part of an investigation or prosecution; (2) for training purposes; or (3) by federal or state law or by municipal ordinance.” Alaska Stat. § 18.65.903(a).
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.” Alaska R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims, except as provided in paragraphs (a) and (b) below:

	<p>(a) Whenever the prosecution in a criminal trial offers (1) real evidence which is of such a nature as not to be readily identifiable, or as to be susceptible to adulteration, contamination, modification, tampering, or other changes in form attributable to accident, carelessness, error or fraud, or (2) testimony describing real evidence of the type set forth in (1) if the information on which the description is based was acquired while the evidence was in the custody or control of the prosecution, the prosecution must first demonstrate as a matter of reasonable certainty that the evidence is at the time of trial or was at the time it was observed properly identified and free of the possible taints identified by this paragraph.</p> <p>(b) In any case in which real evidence of the kind described in paragraph (a) of this rule is offered, the court may require additional proof before deciding whether to admit or exclude evidence under Rule 403. ”</p> <p style="text-align: right;">Alaska R. Evid. 901.</p>
Expert Testimony:	<p>Alaska Rule of Evidence 702 and <i>Daubert</i> standard limited to “expert testimony based on scientific theory, as opposed to testimony based upon the expert’s personal experience.” <i>Thompson v. Cooper</i>, 290 P.3d 393, 399-400 (Alaska 2012).</p>

Arizona



Ongoing Projects:

Federal Project(s) Operating in the State:	The University of Arizona’s Gardenroots Citizen Science Project, which is partially supported by the National Institute of Environmental Health Sciences (“NIEHS”) Superfund Research Program, trains historically underrepresented populations residing in environmentally compromised areas of Arizona, both urban and rural, on how to monitor the quality of their harvested rainwater, garden soil, and home garden crops. <i>About</i> , GARDENROOTS, https://gardenroots.arizona.edu/about (last visited Feb. 7, 2019).
State Project(s):	<p>The Arizona Department of Environmental Quality (“ADEQ”) established Arizona Water Watch (“AZWW”), a citizen science water quality monitoring program, to enhance statewide surface water protection efforts by offering Arizonan residents and visitors ages 10 through retirement the opportunity to help ADEQ monitor the health of the state’s waters and inform policies. <i>See Citizen Science Water Monitoring – AZWW</i>, ARIZ. DEP’T OF ENVTL. QUALITY, http://www.azdeq.gov/CitizenScience (last visited Feb. 7, 2019); MEGHAN SMART, ADEQ, ARIZ. WATER WATCH CITIZEN SCIENCE HANDBOOK (Apr. 2017), http://static.azdeq.gov/wqd/azww/azww_handbook.pdf.</p> <p>The Arizona Game & Fish Department is hosting the Bat and Hummingbird Feeder Study where volunteers monitor their feeders to determine the presence of lesser long-nosed bats. <i>See Bat and Hummingbird Feeder Study</i>, ARIZ. GAME & FISH DEP’T, https://www.azgfd.com/wildlife/backyard-bats/ (last visited Feb. 7, 2019).</p>

Collection of Information:

Scientific Collection Permit:	A scientific collection permit is required by the Arizona Game & Fish Department to research both protected native plants, Ariz. Admin. Code R3-3-1105, and live wildlife, <i>id.</i> R12-4-418.
Other Provisions:	<i>See infra</i> “Drone Laws.”

Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice:	No. Liability for trespass requires “reasonable notice prohibiting entry.” Ariz. Rev. Stat. § 13-1502(A)(1) (Criminal trespass in the third degree).
Trespass on State Lands:	<p>“A person is guilty of a class 2 misdemeanor¹⁵¹ who:</p> <ol style="list-style-type: none"> 1. Knowingly commits a trespass upon state lands, either by cutting down or destroying timber or wood standing or growing thereon, by carrying away timber or wood therefrom, by mowing, cutting, or removing hay or grass thereon or therefrom,

¹⁵¹ A class 2 misdemeanor is punishable by a maximum fine of \$750 and/or imprisonment not to exceed 4 months. *See* Ariz. Rev. Stat. § 13-707(A)(2); *id.* § 13-802(B).

	<p>2. Knowingly extracts or removes oil, gas, coal, mineral, earth, rock, fertilizer or fossils of any kind or description therefrom....</p> <p>4. With criminal negligence exposes growing trees, shrubs or undergrowth standing on state lands to danger or destruction by fire.”</p> <p style="text-align: right;">Ariz. Rev. Stat. § 37-501.</p> <p>A person found guilty under this section may also be found liable in a civil action arising from the same cause. <i>See id.</i> § 37-502(A).</p>
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
Law:	“A person who operates an aircraft [includes a model aircraft and civil unmanned aircraft] in the air, on the ground or on the water in a careless or reckless manner that endangers the life or property of another is guilty of a class 1 misdemeanor.” ¹⁵² Ariz. Rev. Stat. § 28-8280(A).
Interference with Emergency Personnel:	“It is unlawful for a person to operate a model aircraft or a civil unmanned aircraft if the operation... [i]nterferes with a law enforcement, firefighter or emergency services operation.” Ariz. Rev. Stat. § 13-3729(A).
	A violation of this subsection is a class 1 misdemeanor. <i>Id.</i> § 13-3729(E).
Preemption:	Arizona law prohibits a city, town or county from enacting certain ordinances, policies or rules regulating the use of unmanned aircraft. <i>See</i> Ariz. Rev. Stat. § 13-3729(C).
Harassment of Wildlife:	“[I]t is unlawful to harass, molest, chase, rally, concentrate, herd, intercept, torment, or drive wildlife with or from any aircraft [defined as “any contrivance used for flight in the air or any lighter-than-air contrivance,” Ariz. Admin. Code R12-4-301], or with or from any motorized terrestrial or aquatic vehicle.” Ariz. Admin. Code R12-4-320(A).
Arizona State Parks and Trails Policy:	All recreational drone use is prohibited in Arizona state parks. <i>See Can I use a drone/plane (quadcopter, UAV) in a State Park?, Frequently Asked Questions (FAQs) About Arizona State Parks & Trails</i> , ARIZ. STATE PARKS & TRAILS, https://azstateparks.com/frequently-asked-questions-faq-about-arizona-state-parks-trails#q17 (last visited Feb. 7, 2019).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Trespass on Critical Public Service Facility:	Trespass against a “critical public service facility” is a class 5 felony. ¹⁵³ Ariz. Rev. Stat. § 13-1504(A)(6) & (B) (Criminal trespass in the first degree).
	A critical public service facility is “[a] structure or fenced yard that is posted with signage indicating it is a felony to trespass or signage indicating high voltage or high pressure . . . and that generates, transmits, or otherwise provides natural gas, liquefied petroleum gas, electricity, or a combustible substance[;]”

¹⁵² A class 1 misdemeanor is punishable by a maximum fine of \$2,500 and/or imprisonment not to exceed 6 months. *See* Ariz. Rev. Stat. § 13-707(A)(1); *id.* § 13-802(A).

¹⁵³ A class 5 felony is punishable by a maximum fine of \$150,000 and/or imprisonment not to exceed 2 years. *See* Ariz. Rev. Stat. § 13-702(D); *id.* § 13-801(A).

	or “is used to manufacture extract, transport, distribute, or store gas, including natural gas or liquefied petroleum gas, oil, electricity, water or hazardous materials, unless it is a retail-only facility.” <i>Id.</i> § 13-1501(1)(a)–(b).
Drone Use Near Critical Facility:	<p>“It is unlawful for a person to operate or use an unmanned aircraft or unmanned aircraft system to intentionally photograph or loiter over or near a critical facility in the furtherance of any criminal offense.” Ariz. Rev. Stat. § 13-3729(B).</p> <p>“Critical facility” includes, but is not limited to: a petroleum or alumina refinery; a petroleum, chemical or rubber production, transportation, storage or processing facility; a chemical manufacturing facility; a water or wastewater treatment facility and water development, distribution or conveyance system, including a dam; an electric generation facility, . . . and any associated substation or switchyard; an electrical transmission or distribution substation; an electrical transmission line of at least sixty-nine thousand volts; an electronic communication station or tower; an energy control center; a distribution operating center; a facility that transfers or distributes natural gas, including a compressor station, regulator station, city gate station or pressure limiting station or a liquefied natural gas facility or supplier tap facility; any railroad infrastructure or facility. <i>Id.</i> § 13-3729(F)(3).</p> <p>A violation of this subsection is a class 6 felony¹⁵⁴. <i>Id.</i> § 13-3729(E).</p>
Stalking Laws:	
Criminal laws:	<p>“A person commits stalking if the person intentionally or knowingly engages in a course of conduct that is directed toward another person and if that conduct causes the victim to:</p> <ol style="list-style-type: none"> 1. Suffer emotional distress or reasonably fear that either... [t]he victim’s property will be damaged or destroyed... [or the victim, victim’s family member, a regular resident, lover, domestic animal or livestock will be physically injured]. 2. Reasonably fear death or the death of [the victim’s family member, a regular resident, lover, domestic animal or livestock].” Ariz. Rev. Stat. § 13-2923(A).
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.” Ariz. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Ariz. R. Evid. 901(a).

¹⁵⁴ A class 6 felony is punishable by a maximum fine of \$150,000 and/or imprisonment not to exceed 1.5 years. *See* Ariz. Rev. Stat. § 13-702(D); *id.* § 13-801(A).

Expert Testimony:	Arizona Rule of Evidence 702 and <i>Daubert</i> standard. <i>See State v. Bernstein</i> , 349 P.3d 200, 202 (Ariz. 2015); <i>State v. Salazar-Mercado</i> , 325 P.3d 996, 999 (Ariz. 2014).
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Arkansas



Ongoing Projects:

State Project(s):	The Arkansas Game and Fish Commission hosts Arkansas Stream Team. <i>See Arkansas Stream Team</i> , ARK. GAME & FISH COMMISSION, https://www.agfc.com/en/get-involved/onthewater/streamteam/ (last visited Feb. 7, 2019). The program trains volunteers “in water-quality monitoring and streambank maintenance and restoration techniques.” <i>Id.</i>
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Collection of Information:

Criminal Ag-Gag Law:	<p>“(4) A person commits an offense if, without the effective consent of the owner and with the purpose to disrupt or damage the enterprise conducted at the animal facility, the person:</p> <p style="padding-left: 40px;">(A) Enters or remains in an animal facility; and</p> <p style="padding-left: 40px;">(B) Had notice that the entry was forbidden or received notice to depart but failed to depart.” Ark. Code § 5-62-203(a).</p> <p>Violation of this section is a Class D felony. <i>Id.</i> § 5-62-203(b).¹⁵⁵</p>
Civil Ag- Gag Law:	<p>“A person who knowingly gains access to a nonpublic area of a commercial property and engages in an act that exceeds the person’s authority to enter the nonpublic area is liable to the owner or operator of the commercial property for any damages sustained by the owner or operator.” Ark. Code § 16-118-113(b).</p> <p>Commercial property includes “business property” and “[a]gricultural or timber production operations, including buildings and all outdoor areas that are not open to the public.” <i>Id.</i> § 16-118-113(a)(1)(A)-(B).</p> <p>An individual in violation of this section is liable for compensatory damages or, if compensatory damages cannot be quantified, statutory damages not to exceed \$5,000 for each day the violation occurred. <i>Id.</i> § 16-118-113(e)(2) & (4).</p>
Exceptions to Civil Ag-Gag Law:	<p>The civil Ag-Gag law “does not apply to a state agency, a state-funded institution of higher education, a law enforcement officer engaged in a lawful investigation of commercial property or of the owner or operator of the commercial property, or a healthcare provider or medical services provider.”</p> <p style="text-align: right;">Ark. Code § 16-118-113(g).</p>
Scientific Collection Permit:	<p>“It is unlawful to take wildlife for scientific study without possessing on the person a valid Commission-issued Scientific Collection Permit.” Code Ark. R. 002.00.1-09.09.</p>
Other Provisions:	<p><i>See infra</i> “Critical Infrastructure Laws.”</p>

¹⁵⁵ For a Class D felony, the sentence may not exceed six (6) years. Ark. Code. § 5-4-401(a)(5). If sentenced to pay a fine, that fine may not exceed ten thousand dollars (\$10,000). *Id.* 5-4-201(a)(2).

Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. A trespasser must enter or remain on the premises belonging to another purposely. Ark. Code § 5-39-203(a)(2). “A person who enters or remains upon unimproved and apparently unused land not fenced or otherwise enclosed in a manner designed to exclude an intruder does so with license and privilege unless: (i) Notice not to enter or remain is personally communicated to the person by the owner or a person authorized by the owner; or (ii) Notice is given by a posting in a conspicuous manner.” <i>Id.</i> § 5-39-101(3)(C).
Drone Laws:	
Drone Law (by effect):	“It is unlawful to use any camera, videotape, photo-optical, photoelectric, or any other image recording device for the purpose of secretly observing, viewing, photographing, filming, or videotaping a person present in a residence, place of business, school, or other structure, or any room or particular location within that structure, if that person: (1) Is in a private area out of public view; (2) Has a reasonable expectation of privacy; and (3) Has not consented to the observation.” Ark. Code § 5-16-101(a). A violation of subsection (a) is a Class D felony. <i>Id.</i> § 5-16-101(c)(1).
State Parks:	Please check with your local state park officials before using drones in state parks.
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Drone Surveillance Law:	“A person commits the offense of unlawful use of an unmanned aircraft system if he or she knowingly uses an unmanned aircraft system to conduct surveillance of, gather evidence or collect information about, or photographically or electronically record critical infrastructure without the prior written consent of the owner of the critical infrastructure.” Ark. Code § 5-60-103(b). “Critical infrastructure” means: an electrical power generation or delivery system; a petroleum refinery; a chemical or rubber manufacturing facility; or a petroleum or chemical storage facility. <i>Id.</i> § 5-60-103(a)(1). “Unlawful use of an unmanned aircraft system is: (1) A Class B misdemeanor; or (2) A Class A misdemeanor for a second or subsequent offense.” <i>Id.</i> § 5-60-103(d). ¹⁵⁶ An individual who violated this section is also liable for civil damages. <i>See id.</i> § 16-118-111.
Stalking Laws:	

¹⁵⁶ A defendant convicted of a misdemeanor may be sentenced according to the following limitations: (1) For a Class A misdemeanor, the sentence shall not exceed one (1) year; and (2) For a Class B misdemeanor, the sentence shall not exceed ninety (90) days. Ark. Code. § 5-4-401(b)(1)-(2). A defendant convicted of a misdemeanor may be sentenced to pay a fine: (1) Not exceeding two thousand five hundred dollars (\$2,500) if the conviction is of a Class A misdemeanor; and (2) Not exceeding one thousand dollars (\$1,000) if the conviction is of a Class B misdemeanor. *Id.* 5-4-201(b)(1)-(2).

Criminal Law:	“A person commits stalking in the third degree if he or she knowingly commits an act that would place a reasonable person in the victim’s position under emotional distress and in fear for his or her safety or a third person’s safety.” Ark. Code. § 5-71-229(c)(1).
Civil Law:	“A person may recover actual damages, and if applicable, punitive damages, reasonable attorney’s fees, and court costs against another person if he or she proves by a preponderance of the evidence that another person knowingly engaged in a course of conduct towards the person that would place a reasonable person in the person’s position under emotional distress or in fear for his or her safety or a third person’s safety.” Ark. Code. § 16-127-102(a).
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support.” Ark. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Ark. R. Evid. 901(a).
Expert Testimony:	<i>Daubert</i> standard and <i>Prater</i> analysis. See <i>Farm Bureau Mut. Ins. Co. of Arkansas v. Foote</i> , 14 S.W.3d 512, 519-20 (Ark. 2000); <i>Prater v. State</i> , 307 Ark. 180, 186-89 (1991).

California



Ongoing Projects:

Federal Project(s) Operating in the State: The Elkhorn Slough National Estuarine Research Reserve, which is managed by the National Oceanic and Atmospheric Administration and the Monterey County Water Resources Agency, has run a volunteer water quality monitoring program since 1988. *See Elkhorn Slough Research: Volunteer Water Quality Monitoring*, ELKHORN SLOUGH, http://elkhornslough.org/research/waterquality_volunteer.htm (last visited Feb. 7, 2019). Through the program, volunteers take monthly samples at twenty-six stations within the reserve. *See id.*

State Project(s): The Clean Water Team, a California state-run program, provides guidance, training, and equipment loans to citizens interested in monitoring surface water and water tables. *SWAMP - Clean Water Team (CWT) – Citizen Monitoring*, CAL. WATER BOARDS, https://www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.html (last visited Feb. 7, 2019). Their site also provides links to existing organizations and other relevant programs. *See id.*

Pursuant to Assembly Bill 617, the California Air Resources Board (“CARB”) established the Community Air Protection Program (“CAPP”) in 2018, a statewide effort to develop community air monitoring and community emissions reduction programs. *See Community Air Protection Program*, CAL. AIR RESOURCES BOARD, <https://ww2.arb.ca.gov/index.php/our-work/programs/community-air-protection-program/about> (last visited Feb. 7, 2019). Under this program, CARB is required to “provide grants to community-based organizations for technical assistance and to support community participation” in air monitoring efforts. Cal. Health & Safety Code § 44391.2(d); *see also id.* § 42705.5.

Collection of Information:

Scientific Collecting Permit: It is unlawful for “any person or entity to take and/or possess live or dead wildlife, or parts thereof in any part of the State of California, for scientific, educational, and/or propagation purposes except as authorized by a permit issued by the [the Department of Fish and Wildlife].” Cal. Code Regs. tit. 14, § 650(a); *see also Scientific Collecting Permits*, CAL. DEP’T OF FISH & WILDLIFE, <https://www.wildlife.ca.gov/Licensing/Scientific-Collecting#53949678-regulations-> (last visited Feb. 7, 2019).

Other Provisions: *See infra* “Drone Laws.”

Trespass Laws:

Limits on Municipal Power: Cities and towns are prohibited from passing ordinances that would require written permission to enter private lands that are not fenced, enclosed, under cultivation, or posted against trespass. Cal. Penal Code § 602.2.

Criminal Liability for Trespass Despite Lack of Notice:	No. For liability to attach to an intruder on uncultivated and unenclosed land, the land must be marked against trespass by three signs per mile and at every road or trail entering the property in order and the intruder must refuse to leave when asked. Cal. Penal Code § 602.8(a).
Drone Laws:	
Criminal Interference with Emergency Responders Law:	<p>“(1) Every person who goes to the scene of an emergency, or stops at the scene of an emergency, for the purpose of viewing the scene or the activities of police officers, firefighters, emergency medical, or other emergency personnel, or military personnel coping with the emergency in the course of their duties during the time it is necessary for emergency vehicles or those personnel to be at the scene of the emergency or to be moving to or from the scene of the emergency for the purpose of protecting lives or property, unless it is part of the duties of that person’s employment to view that scene or those activities, and thereby impedes police officers, firefighters, emergency medical, or other emergency personnel or military personnel, in the performance of their duties in coping with the emergency, is guilty of a misdemeanor¹⁵⁷.</p> <p>(2) For purposes of this subdivision, a person shall include a person, regardless of his or her location, who operates or uses an unmanned aerial vehicle, remote piloted aircraft, or drone that is at the scene of an emergency.” Cal. Penal Code § 402(a).</p>
Civil Privacy Law [known as the “Anti-Paparazzi Law”]:	<p>“(a) A person is liable for physical invasion of privacy when the person knowingly enters onto the land or into the airspace above the land of another person without permission or otherwise commits a trespass in order to capture any type of visual image, sound recording, or other physical impression of the plaintiff engaging in a private, personal, or familial activity and the invasion occurs in a manner that is offensive to a reasonable person.</p> <p>(b) A person is liable for constructive invasion of privacy when the person attempts to capture, in a manner that is offensive to a reasonable person, any type of visual image, sound recording, or other physical impression of the plaintiff engaging in a private, personal, or familial activity, through the use of any device, regardless of whether there is a physical trespass, if this image, sound recording, or other physical impression could not have been achieved without a trespass unless the device was used.” Cal. Civ. Code § 1708.8.</p>
State Parks:	<p><u>Drone in State Wilderness Areas, Natural Preserves, and Cultural Preserves:</u> “Except where it is necessary in an emergency within the wilderness area, cultural preserves, and natural preserves, there shall be no use of ...motorized equipment... except to the extent the Director of the Department of Parks and Recreation [permits].” Cal. Code Regs. tit. 14, § 4351(a). Motorized equipment includes drones. See <i>Unmanned Aircraft System (Drones) in State Parks, CAL. DEP’T OF PARKS & RECREATION</i>, https://www.parks.ca.gov/?page_id=29229 (last visited Feb. 7, 2019). Please check the designation of the park unit before</p>

¹⁵⁷ “[A] misdemeanor is punishable by imprisonment in the county jail not exceeding six months, or by fine not exceeding one thousand dollars (\$1,000), or by both.” Cal. Penal Code § 19.

	<p>visiting.</p> <p><u>Other State Park Units:</u> As each park unit may have its own drone policies, “California State Parks recommends that recreational drone users check with their local State Park District before operating a [drone] within a State Park.” <i>Id.</i></p>
Critical Infrastructure Laws:	
Loitering Law:	<p>It is illegal to “loiter” in the immediate vicinity of “industrial property” that is posted against trespass. Cal. Penal Code § 555.2. For this offense, oil facilities, gas facilities, hydroelectric facilities, waste management facilities, reservoirs, munitions facilities, rail yards, and quarries are defined as “industrial property.” <i>Id.</i> § 554 (full list within statute).</p> <p>A violation of this section is a misdemeanor¹⁵⁸. <i>Id.</i> § 555.3.</p>
Stalking Laws:	
Criminal Law:	<p>“Any person who willfully, maliciously, and repeatedly follows or willfully and maliciously harasses another person and who makes a credible threat with the intent to place that person in reasonable fear for his or her safety, or the safety of his or her immediate family is guilty of the crime of stalking, punishable by imprisonment in a county jail for not more than one year, or by a fine of not more than one thousand dollars (\$1,000), or by both that fine and imprisonment, or by imprisonment in the state prison.” Cal. Penal Code § 646.9(a).</p>
Civil Law:	<p>“A person is liable for the tort of stalking when the plaintiff proves all of the following elements of the tort:</p> <p>(1) The defendant engaged in a pattern of conduct the intent of which was to follow, alarm, place under surveillance, or harass the plaintiff. In order to establish this element, the plaintiff shall be required to support his or her allegations with independent corroborating evidence.</p> <p>(2) As a result of that pattern of conduct, either of the following occurred:</p> <p style="padding-left: 40px;">(A) The plaintiff reasonably feared for his or her safety, or the safety of an immediate family member. . . .</p> <p style="padding-left: 40px;">(B) The plaintiff suffered substantial emotional distress, and the pattern of conduct would cause a reasonable person to suffer substantial emotional distress.</p> <p>(3) One of the following:</p> <p style="padding-left: 40px;">(A) The defendant, as a part of the pattern of conduct specified in paragraph (1), made a credible threat with either (i) the intent to place the plaintiff in reasonable fear for his or her safety, or the safety of an</p>

¹⁵⁸ Sentence and fine limits are explained *supra* note 157.

	<p>immediate family member, or (ii) reckless disregard for the safety of the plaintiff or that of an immediate family member. In addition, the plaintiff must have, on at least one occasion, clearly and definitively demanded that the defendant cease and abate his or her pattern of conduct and the defendant persisted in his or her pattern of conduct unless exigent circumstances make the plaintiff's communication of the demand impractical or unsafe.</p> <p>(B) The defendant violated a restraining order, including, but not limited to, any order issued pursuant to Section 527.6 of the Code of Civil Procedure, prohibiting any act described in subdivision (a).” Cal. Civ. Code § 1708.7(a).</p> <p><u>Exception:</u> “This section shall not be construed to impair any constitutionally protected activity, including, but not limited to, speech, protest, and assembly.” <i>Id.</i> § 1708.7(f).</p>
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	“A person verifying a pleading need not swear to the truth or his or her belief in the truth of the matters stated therein but may, instead, assert the truth or his or her belief in the truth of those matters ‘under penalty of perjury.’” Cal. Civ. Proc. Code § 446(a).
Authentication or Chain of Custody:	“Authentication of a writing means (a) the introduction of evidence sufficient to sustain a finding that it is the writing that the proponent of the evidence claims it is or (b) the establishment of such facts by any other means provided by law.” Cal. Evid. Code § 1400.
Expert Testimony:	<i>Kelly/Frye</i> standard (but does not apply to medical opinions). <i>See People v. Daveggio & Michaud</i> , 415 P.3d 717, 748-49 & 749 n. 7 (Cal. 2018) (noting Daubert has replaced Kelly/Frye at the federal level but that Kelly/Frye remains the standard in California).

Colorado



Ongoing Projects:

Federal Project(s) Operating in the State: The U.S. Environmental Protection Agency (“EPA”) sponsors the Keep It Clean – Neighborhood Environmental Trios (“KIC-NET”) program in Denver, through which students collect and analyze local water samples. *See Stormwater, Earth Force Denver*, EARTH FORCE, <https://earthforce.org/stormwater/> (last visited Feb. 7, 2019). Students then present their work to city engineers responsible for managing stormwater runoff. *See id.*

EPA is also funding an effort by National Jewish Health, RTI International, the City of Denver, Groundwork Denver, and Colorado Department of Public Health and Environment to learn how communities can use personal air quality monitors to understand air pollution and take action to protect their health. *See Monitoring the Air in Our Community: Engaging Citizens in Research*, U.S. ENVTL. PROTECTION AGENCY, https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuaction/display.abstractDetail/abstract/10738/report/0 (last visited Feb. 7, 2019). As part of this project, “citizen scientists will engage with data collection and analytics through written reports and smart phone applications, and will receive exposure coaching, in an effort to cultivate data understanding, encourage actions for exposure reduction, and guide informational preferences for the future.” *Monitoring the Air in Our Community: Engaging Citizens in Research*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/470/#> (last visited Feb. 7, 2019).

State Project(s): Colorado River Watch is a statewide citizen science program overseen by Colorado Parks and Wildlife (“CPW”) and the non-profit organization Earth Force. *River Watch*, COLORADO PARKS & WILDLIFE, <https://cpw.state.co.us/aboutus/Pages/RiverWatch.aspx> (last visited Feb. 7, 2019). Volunteers are given training and guidance to ensure high quality data in monitoring the state’s water. *See id.* <https://coloradoriverwatch.org/>

CPW also enlists volunteers for its raptor monitoring program, which allows the state to maintain up-to-date records on raptor populations and protect necessary habitats. *Raptor Monitoring*, COLORADO PARKS & WILDLIFE, <https://cpw.state.co.us/aboutus/Pages/RS-RaptorMonitoring.aspx> (last visited Feb. 7, 2019).

Collection of Information:

Scientific Collection Permit: A scientific collection permit is required for “importing, marking or banding or temporary or permanent possession of wildlife and collection of wildlife specimens for the purpose of scientific collections or bona fide scientific research.” 2 Colo. Code Regs. § 406-13:1315(A); *see also Scientific Collection Application - Mammals and Birds*, COLO. PARKS & WILDLIFE,

	https://cpw.state.co.us/aboutus/Pages/SWL-CollectionMammalBird.aspx (last visited Feb. 7, 2019).
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	Yes. A person is liable for trespass if she simply “unlawfully enters or remains upon the premises of another.” Colo. Rev. Stat. § 18-4-504(1). “Premises” includes real property as well as “the stream banks and beds of any nonnavigable fresh water streams flowing through such real property.” <i>See id.</i> § 18-4-504.5. Third degree criminal trespass is a class 1 petty offense ¹⁵⁹ . <i>See id.</i> § 18-4-504(2).
Other Provisions:	Trespass against property classified as “agricultural land” by a county assessor carries a heightened penalty as a class 3 felony ¹⁶⁰ . Colo. Rev. Stat. § 18-4-504(2)(a).
Drone Laws:	
State Parks:	It is prohibited to “operate radio-controlled and/or fuel-propelled models, except in designated areas.” 2 Colo. Code Regs. § 405-1:100(C)(24).
Stalking Laws:	
Criminal Law:	“A person commits stalking if directly, or indirectly, through another person, the person knowingly... [r]epeatedly follows, approaches, contacts, places under surveillance, or makes any form of communication with another person, a member of that person's immediate family, or someone with whom that person has or has had a continuing relationship in a manner that would cause a reasonable person to suffer serious emotional distress and does cause that person, a member of that person's immediate family, or someone with whom that person has or has had a continuing relationship to suffer serious emotional distress. For purposes of this paragraph (c), a victim need not show that he or she received professional treatment or counseling to show that he or she suffered serious emotional distress.” Colo. Rev. Stat. § 18-3-602(1)(c).
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	“[P]hotographs, video tapes, or films of property . . . obtained unlawfully are competent evidence[.]” Colo. Rev. Stat. § 18-4-514.
Evidentiary Standards:	
Pleading a Claim:	Requires certification by attorney that the claim “is well grounded in fact and warranted by existing law.” C.R.C.P. 11.
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” C.R.E. 901(a).

¹⁵⁹ “The penalty for commission of a class 1 petty offense, upon conviction, is a fine of not more than five hundred dollars, or imprisonment for not more than six months other than in state correctional facilities, or both.” Colo. Rev. Stat. § 18-1.3-503(1).

¹⁶⁰ For class 3 felonies committed after July 1, 2018, the minimum sentence is 3 years imprisonment and maximum sentence is 12 years imprisonment, with mandatory 3 years parole. Colo. Rev. Stat. § 18-1.3-401(1)(a)(V)(A.1).

Expert Testimony:	<i>Shreck-Daubert</i> standard, but court may apply CRE 702 broadly to determine reliability of evidence. <i>See People v. Shreck</i> , 22 P.3d 68, 70 (Colo. 2001).
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Connecticut



Ongoing Projects:

<p>State Project(s):</p>	<p>The Connecticut Department of Energy and Environmental Protection (“DEEP”) manages a volunteer water quality monitoring group: Riffle Bioassessment by Volunteers (“RBV”). <i>See Riffle Bioassessment by Volunteers (RBV) Program</i>, CONN. DEP’T OF ENERGY & ENVTL. PROTECTION, http://www.ct.gov/deep/cwp/view.asp?a=2719&q=325606&deepNav_GID=1654%20 (last visited Feb. 7, 2019). Through the program, volunteers collect data on macroinvertebrate populations, which DEEP uses as an indication of water quality. <i>See id.</i> However, “[b]ecause it is a screening approach and not a more in-depth assessment methodology, RBV cannot provide a detailed water quality assessment nor can it be used to identify low or impaired water quality.” CONN. DEP’T OF ENERGY AND ENVTL. PROTECTION, 2016 RBV PROGRAM ANNUAL SUMMARY REPORT 2 (2016), https://www.ct.gov/deep/lib/deep/water/volunteer_monitoring/2016_rbv_report.pdf.</p> <p>Other DEEP citizen science projects focus on wildlife monitoring, such as the CT Bird Atlas Project. <i>See Wildlife Division - Citizen Science / Volunteer Opportunities</i>, CONN. DEP’T OF ENERGY & ENVTL. PROTECTION, https://www.ct.gov/deep/cwp/view.asp?a=2723&q=325722&deepNav_GID=1655 (last visited Feb. 7, 2019); <i>see also Contributing Data</i>, CONN. DEP’T OF ENERGY & ENVTL. PROTECTION, https://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&deepNav_GID=1641#ScientificCollectionPermits (last visited Feb. 7, 2019).</p>
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Collection of Information:

<p>Scientific Collection Permits:</p>	<p>A scientific collection permit is required to take plants, fish, and wildlife for research purposes. <i>See Contributing Data</i>, CONN. DEP’T OF ENERGY & ENVTL. PROTECTION, https://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&deepNav_GID=1641#ScientificCollectionPermits (last visited Feb. 7, 2019). Collection of minerals for research and educational purposes also requires a permit. <i>See Educational Mineral Collecting for Mineral Clubs, Nature Centers, Schools and Connecticut Museums</i>, CONN. DEP’T OF ENERGY & ENVTL. PROTECTION, https://www.ct.gov/deep/cwp/view.asp?a=2701&q=323440&deepNav_GID=1641 (last visited Feb. 7, 2019).</p>
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Trespass Laws:

<p>Criminal Liability for Trespass Despite Lack of Notice:</p>	<p>No. If there is no notice, you are subject to a fine, but not to criminal liability.</p> <p>(1) Simple Trespass: Infraction Trespass without notice (but with knowledge that one is not licensed or privileged to enter the property) is an infraction. Conn. Gen. Stat. § 53a-110a(a)-(b). An infraction is subject to a fine of between \$35 and \$90. <i>See id.</i> § 51-164m(c)(1). Punishment for such an infraction is therefore not</p>
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	<p>considered a criminal prosecution. <i>State v. Caracoglia</i>, 38 A.3d 226, 235 (Conn. App. Ct. 2012).</p> <p>(2) Third Degree Criminal Trespass: Class C misdemeanor “A person is guilty of criminal trespass in the third degree when, knowing that such person is not licensed or privileged to do so...[she] enters or remains in premises which are posted in a manner prescribed by law or reasonably likely to come to the attention of intruders or are fenced or otherwise enclosed in a manner designed to exclude intruders[.]” Conn. Gen. Stat. § 53a-109(a)(1). A violation of this section is a crime¹⁶¹. <i>Id.</i> § 53a-109(b).</p>
Drone Laws:	
Preemption:	Municipalities are barred from regulating possession or use of drones, outside of water companies and utilities regulating drones over public water supply or related lands. Conn. Gen. Stat. § 7-149b(b).
State Parks:	<p>“The use of remote controlled model aircraft or ‘drones’ is prohibited at Connecticut State Parks, State Forests or other lands under the control of [DEEP], unless specifically authorized by the Commissioner in a Special Use License.” <i>Use of Remote Controlled Aircraft or “Drones”</i>, CONN. DEP’T OF ENERGY & ENVTL. PROTECTION, https://www.ct.gov/deep/cwp/view.asp?a=2716&q=575106&deepNav_GID=1650 (last visited Feb. 7, 2019). This policy is born from DEEP regulations, subsections 23-4-1(x) (prohibits noisy activities that infringe on the ability of others to enjoy state parks or forest property) and 23-4-1(b) (prohibits noisy activities that disturb wildlife). <i>See id.</i>; <i>see also</i> Conn. Agencies Regs. § 23-4-1(b) & (x).</p>
Stalking Laws:	
Criminal Law:	<p>“(a) For the purposes of this section, “course of conduct” means two or more acts, including, but not limited to, acts in which a person directly, indirectly or through a third party, by any action, method, device or means, (1) follows, lies in wait for, monitors, observes, surveils, threatens, harasses, communicates with or sends unwanted gifts to, a person, or (2) interferes with a person’s property.</p> <p>(b) A person is guilty of stalking in the second degree when:</p> <p>(1) Such person knowingly engages in a course of conduct directed at a specific person that would cause a reasonable person to fear for such person’s physical safety or the physical safety of a third person; or</p> <p>(2) Such person intentionally, and for no legitimate purpose, engages in a course of conduct directed at a specific person that would cause a reasonable person to fear that such person’s employment, business or career is threatened, where (A) such conduct consists of the actor telephoning to,</p>

¹⁶¹ Criminal trespass in the third degree is a class C misdemeanor. Conn. Gen. Stat. § 53a-109(b). The sentence for a class C misdemeanor may not exceed 3 months, *id.* § 53a-36, and the fine may not exceed \$500, *id.* § 53a-42.

	<p>appearing at or initiating communication or contact at such other person’s place of employment or business, provided the actor was previously and clearly informed to cease such conduct, and (B) such conduct does not consist of constitutionally protected activity.”</p> <p style="text-align: right;">Conn. Gen. Stat. § 53a-181d.</p>
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification by attorney that “there is good ground to support” the claim. Conn. Super. Ct. R. § 4–2(b).
Authentication or Chain of Custody:	“The requirement of authentication as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the offered evidence is what its proponent claims it to be.” Conn. Code Evid. 9-1(a).
Expert Testimony:	<i>Porter-Daubert</i> standard. See <i>State v. Porter</i> , 698 A.2d 739, 743-58 (Conn. 1997).

Delaware



Ongoing Projects:

Federal Project(s)
Operating in the
State:

The United States Geological Survey (“USGS”) National Wetlands Research Center uses volunteer data to study production levels in swamps to better understand how swamps can store atmospheric carbon. *North American Baldcypress Swamp Volunteer Network*, U.S. GEOLOGICAL SURV., <https://www.nwrc.usgs.gov/special/bald-cypress/> (last updated Sept. 28, 2015). In Delaware, USGS has focused on the Murderkill and St. Jones Rivers. *Locations, North American Baldcypress Swamp Volunteer Network*, U.S. GEOLOGICAL SURV., <https://www.nwrc.usgs.gov/special/bald-cypress/locations.htm> (last updated Sept. 28, 2015).

The U.S. Fish & Wildlife Service sponsors the Delaware Department of Natural Resources and Environmental Control’s (“DNREC”) Delaware Shorebird Project, through which a team of scientists, local volunteers, researchers, and birders research the populations and health of migratory shorebirds to protect and manage their local habitats. *Delaware Shorebird Project, Division of Fish & Wildlife*, DEL. DEP’T OF NAT. RESOURCES & ENVTL. CONTROL, <http://www.dnrec.delaware.gov/fw/Shorebirds/Pages/default.aspx> (last visited Feb. 7, 2019).

The U.S. Fish & Wildlife Service, National Oceanic and Atmospheric Administration, and USGS sponsor the Delaware Bay Horseshoe Crab Survey, which gathers volunteers to use beach surveys to collect data on Horseshoe crab populations. *See History*, DEL. BAY HORSESHOE CRAB SURV., <https://www.delawarebayhscsurvey.org/survey/> (last visited Feb. 7, 2019). The data inform Atlantic State Marine Fisheries Commission protocols for commercial fishing. *See id.*

State Project(s):

Through its Surface Quality Monitoring Program, DNREC’s Division of Watershed Stewardship collects data on the chemical, physical, and biological characteristics of Delaware’s surface waters. *Water Quality Monitoring, Division of Watershed Stewardship*, DEL. DEP’T OF NAT. RESOURCES & ENVTL. CONTROL, <http://www.dnrec.delaware.gov/swc/wa/Pages/WaterQualityMonitoring.aspx> (last visited Feb. 7, 2019).

The Delaware Division of Fish & Wildlife manages the Citizen Osprey Monitoring Program, which uses volunteers to record Osprey nests and platforms to inform conservation efforts. *Citizen Osprey Monitoring Program, Division of Fish & Wildlife*, DEL. DEP’T OF NAT. RESOURCES & ENVTL. CONTROL, <http://www.dnrec.delaware.gov/fw/Volunteers/Pages/COMP.aspx> (last visited Feb. 7, 2019).

Collection of Information:	
Scientific Collection Permit:	“No person or persons shall take, capture, have in possession or transport protected wildlife, finfish, shellfish, or their nests or eggs for scientific, education or propagating purposes except as authorized by a permit from the Director of the Division of Fish and Wildlife in accordance with existing laws and regulations.” 7 Del. Code § 555(a).
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. A person is guilty of third degree trespass only if that person “ <i>knowingly</i> enters or remains unlawfully upon real property.” 11 Del. Code § 821 (emphasis added). ¹⁶² “A person who, regardless of intent, enters or remains upon premises which appear at the time to be open to the public does so with license and privilege unless the person defies a lawful order not to enter or remain, personally communicated by the owner of the premises or another authorized person.” <i>Id.</i> § 829(d).
Trespass on Fenced Property:	A person is guilty of second degree trespass if that person “knowingly enters...upon real property which is fenced or otherwise enclosed in a manner manifestly designed to exclude intruders.” 11 Del. Code § 822. ¹⁶³
Trespass on Agricultural Property:	An individual is guilty of first degree trespass if that person “knowingly enters or remains unlawfully in a building used to shelter, house, milk, raise, feed, breed, study or exhibit animals.” 11 Del. Code § 823. ¹⁶⁴
Drone Laws:	
Interference with First Responders:	“[N]o person shall knowingly operate, direct, or program an unmanned aircraft system to fly... [o]ver any incident where first responders are actively engaged in response[.]” 11 Del. Code § 1334(b)(3). ¹⁶⁵
Exceptions:	The statutory prohibitions of section 1334 do not apply to unmanned aircraft systems operated by “an institution of higher education for educational purposes in compliance with Federal Aviation Administration regulations” or “used for a commercial or other purpose if the operator is authorized by the Federal Aviation Administration.” 11 Del. Code § 1334(c)(3)-(4).

¹⁶² Criminal trespass in the third degree is a violation. 11 Del. Code § 821. For violations, the court may impose a fine of up to \$345 for the first offense. *Id.* § 4207.

¹⁶³ Criminal trespass in the second degree is an unclassified misdemeanor. 11 Del. Code § 822. “[T]he sentence may include up to 30 days incarceration at Level V and such fine up to \$575, restitution or other conditions as the court deems appropriate.” *Id.* § 4206(c).

¹⁶⁴ Criminal trespass in the first degree is a class A misdemeanor. 11 Del. Code § 823. “The sentence for a class A misdemeanor may include up to 1 year incarceration at Level V and such fine up to \$2,300, restitution or other conditions as the court deems appropriate.” *Id.* § 4206(a).

¹⁶⁵ “Unlawful use of an unmanned aircraft system is an unclassified misdemeanor for a first offense.” 11 Del. Code § 1334(d). Sentence and fine limitations for unclassified misdemeanors are explained *supra* note 163.

Preemption:	“Only the State may enact a law or take any other action to prohibit, restrict, or regulate the testing or operation of an unmanned aircraft systems in the State.” 11 Del. Code § 1334(e).
State Parks:	“Flying of radio-controlled model aircraft, including drones, [] shall not be permitted in areas administered by the Division except in areas set aside and designated for such purposes.” 7 Del. Admin. Code 9201-13.2. DNREC’s Division of Parks & Recreation prohibits the use of drones: (1) in or around unprotected persons; (2) in parking lots; (3) near any protected wildlife species, in active wildlife nesting or breeding areas or harassing wildlife; (4) Nature Preserves; (4) where the activity would not be appropriate within the overall character of a park; and (5) within 100’ of vulnerable property. <i>See Drones in Delaware State Parks</i> , DEL. STATE PARKS, https://www.destateparks.com/Know/Drones (last visited Feb. 7, 2019). To otherwise fly a drone in a state park requires a permit. <i>See id.</i>
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Drone Use Over Critical Infrastructure:	Except as otherwise provided in Delaware’s law regarding the unlawful use of an unmanned aircraft system, “no person shall knowingly operate, direct, or program an unmanned aircraft system to fly . . . over any critical infrastructure.” 11 Del. Code § 1334(b)(2). ¹⁶⁶ “‘Critical infrastructure’ means petroleum refineries, petroleum storage facilities, chemical storage facilities, chemical manufacturing facilities, fuel storage facilities, electric substations, power plants, electric generation facilities, military facilities, commercial port and harbor facilities, rail yard facilities, drinking water treatment or storage facilities, correctional facilities, government buildings, and public safety buildings or facilities.” <i>Id.</i> § 1334(a)(1).
Exceptions:	<i>See supra</i> “Drone Laws.”
Stalking Laws:	
Criminal Law:	Stalking entails “knowingly engag[ing] in a course of conduct directed at a specific person” that would cause a reasonable person to either “[f]ear physical injury to himself or herself or that of another person” or “[s]uffer other significant mental anguish or distress that may, but does not necessarily, require medical or other professional treatment or counseling.” 11 Del. Code § 1312(a).
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	

¹⁶⁶ Penalty explained *supra* note 165.

Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Del. Super. Ct. Civ. R. 11(b)(3).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Del. R. Evid. 901(a).
Expert Testimony:	<i>Daubert</i> standard. See <i>M.G. Bancorporation, Inc. v. Le Beau</i> , 737 A.2d 513, 521-22 (Del. 1999). The trial judge must ensure that all expert testimony “is not only relevant, but reliable,” by considering “testing, peer review, error rates, and ‘acceptability’ in the relevant scientific community.” <i>Rodriguez v. State</i> , 30 A.3d 764, 769 (Del. 2011) (internal quotation marks omitted) (citing <i>Daubert v. Merrell Dow Pharmaceuticals, Inc.</i> , 509 U.S. 579, 589 (1993); <i>M.G. Bancorporation</i> , 737 A.2d at 521).

Florida



Ongoing Projects:

Federal Project(s) Operating in the State: The National Oceanic and Atmospheric Administration provides grants to help fund the Florida Microplastic Awareness Project. *See Florida Microplastic Awareness Project*, U. OF FLA. IFAS EXTENSION, <http://sfyl.ifas.ufl.edu/flagler/marine-and-coastal/microplastics/> (last visited Feb. 7, 2019). This project enlists volunteers to collect and filter coastal water samples to identify microplastics in the water. *See id.* The University of Florida IFAS Extension also has other water-monitoring projects, such as the Florida Keys Water Watch. *See Florida Sea Grant*, U. OF FLA. IFAS EXTENSION, <https://sfyl.ifas.ufl.edu/monroe/florida-sea-grant-program---monroe-county/> (last visited Feb. 7, 2019).

WeDigFLPlants, which is sponsored by the National Science Foundation, “is a collaboration between professional research botanists, amateur naturalists, gardeners, educators, and citizen scientists to build the most complete picture possible of plant distribution and diversity in Florida over the past 200 years.” *WeDigFLPlants*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/359/#> (last visited Feb. 7, 2019); *see also WeDigFLPlants*, BIOSPEX, <https://biospex.org/project/wedigflplants> (last visited Feb. 7, 2019).

State Project(s): A regional office of the Florida Department of Environmental Protection (“DEP”) has partnered with local volunteer groups to create the Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network, which trains volunteers on data collection protocols, and sends them out to monitor water quality once a month. *See Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network*, FLA. DEP’T OF ENVTL. PROTECTION, <https://floridadep.gov/fco/aquatic-preserve/content/charlotte-harbor-estuaries-volunteer-water-quality-monitoring-network> (last visited Feb. 7, 2019).

The Florida Fish and Wildlife Conservation Commission hosts a variety of wildlife observation citizen science projects. *See What Opportunities Are In Your Area?, Volunteer*, FLA. FISH & WILDLIFE CONSERVATION COMMISSION, <http://myfwc.com/get-involved/volunteer/#> (last visited Feb. 7, 2019). Examples of these efforts include the Gopher Tortoise survey project and Rare Bird Registry. *See Sightings*, FLA. FISH & WILDLIFE CONSERVATION COMMISSION, <https://myfwc.com/get-involved/volunteer/citizen-science/sightings/> (last visited Feb. 7, 2019).

Collection of Information:

Scientific Collection Permit: A permit from the Florida Fish and Wildlife Conservation Commission is required to take or possess wildlife or freshwater fish or their nests or eggs for scientific purposes. *See Fla. Admin. Code r. 68A-9.002(1); Scientific Collecting and Educational Possession, Protected Wildlife Permits*, FLA. FISH & WILDLIFE

	CONSERVATION COMMISSION, https://myfwc.com/license/wildlife/protected-wildlife-permits/ (last visited Feb. 7, 2019).
Other Provisions:	<i>See infra</i> “Drone Laws.”
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. A person commits trespass on property other than a structure or conveyance only when “notice against entering or remaining is given, either by actual communication to the offender or by posting, fencing, or cultivation.” Fla. Stat. § 810.09(1)(a)(1).
Trespass on Agricultural Property:	Trespass against “commercial horticulture property,” an “agricultural site for testing or research purposes,” or an “agricultural chemicals manufacturing facility” is a felony of the third degree ¹⁶⁷ . Fla. Stat. § 810.09(2)(e)–(f), (i).
Drone Laws:	
Surveillance Law:	<p>“A person, a state agency, or a political subdivision . . . may not use a drone equipped with an imaging device to record an image of privately owned real property . . . with the intent to conduct surveillance on the . . . property captured in the image in violation of such person’s reasonable expectation of privacy without his or her written consent. For purposes of this section, a person is presumed to have a reasonable expectation of privacy on his or her privately owned real property if he or she is not observable by persons located at ground level in a place where they have a legal right to be, regardless of whether he or she is observable from the air with the use of a drone.” Fla. Stat. § 934.50(3)(b).¹⁶⁸</p> <p>Punitive and compensatory civil damages may be sought by the victim against the individual who violated subsection (3)(b). <i>Id.</i> § 934.50(5).</p>
Exception:	<p>“This section does not prohibit the use of a drone... (d) By a person or an entity engaged in a business or profession licensed by the state, or by an agent, employee, or contractor thereof, if the drone is used only to perform reasonable tasks within the scope of practice or activities permitted under such person’s or entity’s license...; . . . (f) To capture images by or for an electric, water, or natural gas utility . . . for conducting environmental monitoring, as provided by federal, state, or local law, rule, or permit; . . . [or] (g) For aerial mapping, if the person or entity using a drone for this purpose is operating in compliance with Federal Aviation Administration regulations.” Fla. Stat. § 934.50(4).</p>
Preemption:	<p>“This subsection does not limit the authority of a local government to enact or enforce local ordinances relating to nuisances, voyeurism, harassment, reckless endangerment, property damage, or other illegal acts arising from the use of unmanned aircraft systems if such laws or ordinances are not specifically related to the use of an unmanned aircraft system for those illegal acts.” Fla. Stat. § 330.41(3)(c).</p>

¹⁶⁷ A felony in the third degree is punishable by imprisonment not to exceed 5 years, *id.* § 775.082(3)(e), and/or a fine not to exceed \$5,000, *id.* § 775.083(1)(c).

¹⁶⁸ Section 934.50 does not preempt the adoption of municipal ordinances prohibiting the use of drones by private individuals for surveillance which invades privacy rights. *See* Florida Op. Att’y Gen., 2016-04, March 30, 2016 (2016 WL 1635038).

State Parks:	Drones are prohibited to land on and/or take off from any state park property. ¹⁶⁹
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Drone Law:	<p>“A person may not knowingly or willfully:</p> <ol style="list-style-type: none"> 1. Operate a drone over a critical infrastructure facility; 2. Allow a drone to make contact with a critical infrastructure facility, including any person or object on the premises of or within the facility; <p>or</p> <ol style="list-style-type: none"> 3. Allow a drone to come within a distance of a critical infrastructure facility that is close enough to interfere with the operations of or cause a disturbance to the facility.” Fla. Stat. § 330.41(4)(a). <p>A violation of this section constitutes a misdemeanor of the second degree, <i>id.</i> § 330.41(4)(b), punishable by imprisonment not exceeding 15 years, <i>id.</i> § 775.082(3)(d), and/or a fine not to exceed \$10,000, <i>id.</i> § 775.083(1)(b).</p> <p>“‘Critical infrastructure facility’ means any of the following, if completely enclosed by a fence or other physical barrier that is obviously designed to exclude intruders, or if clearly marked with a sign or signs which indicate that entry is forbidden and which are posted on the property in a manner reasonably likely to come to the attention of intruders:</p> <ol style="list-style-type: none"> 1. An electrical power generation or transmission facility, substation, switching station, or electrical control center. 2. A chemical or rubber manufacturing or storage facility. 3. A mining facility. 4. A natural gas or compressed gas compressor station, storage facility, or natural gas or compressed gas pipeline. 5. A liquid natural gas or propane gas terminal or storage facility with a capacity of 4,000 gallons or more. 6. Any portion of an aboveground oil or gas pipeline. 7. A wireless communications facility, including the tower, antennae, support structures, and all associated ground-based equipment.” <i>Id.</i> § 330.41(2)(a).
Stalking Laws:	
Criminal Law:	“A person who willfully, maliciously, and repeatedly follows, harasses, or cyberstalks another person commits the offense of stalking[.]” Fla. Stat. § 784.048(2).
Use of Information:	
Although our research is incomplete, this provision could be construed to prohibit the use of information collected by citizens.	

¹⁶⁹ This information was sourced from a Florida State Parks representative. For more information, please call (850) 245-2157.

Explicitly Prohibits:	“Evidence obtained or collected in violation of this act [which prohibits the recording of images of private property by a drone without written consent] is not admissible as evidence in a criminal prosecution in any court of law in this state.” Fla. Stat. § 934.50(6).
Evidentiary Standards:	
Pleading a Claim:	Requires a description of “the ultimate facts showing that the pleader is entitled to relief.” Fla. R. Civ. P. 1.110(b).
Authentication or Chain of Custody:	“Authentication or identification of evidence is required as a condition precedent to its admissibility. The requirements of this section are satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Fla. Stat. § 90.901.
Expert Testimony:	<i>Frye</i> standard. <i>See DeLisle v. Crane Co.</i> , No. SC16-2182, 2018 WL 5075302, at *8 (Fla. Oct. 15, 2018) (“With our decision today, we reaffirm that <i>Frye</i> , not <i>Daubert</i> , is the appropriate test in Florida courts.”).

Georgia



Ongoing Projects:

Federal Project(s)
Operating in the
State:

The Georgia Environmental Protection Division (“EPD”) manages the Georgia Adopt-A-Stream program, which uses volunteers to collect water quality baseline data across the state. *See About Georgia Adopt-A-Stream*, GEORGIA ADOPT-A-STREAM, <https://adoptastream.georgia.gov/about-georgia-adopt-stream> (last visited Feb. 7, 2019). The program is funded by a Section 319(h) Grant from the U.S. Environmental Protection Agency. *See id.*

The Greater Atlanta Pollinator Partnership (“GAPP”), a U.S. Forest Service collaboration, provides a garden registry and mapping service that allows scientists to track garden establishment, assess habitat development trends, and identify where pollination corridors need to be further developed. *What Will We Do/How Will We Do It?*, GREATER ATLANTA POLLINATOR PARTNERSHIP, <https://gapp.org/about/what-will-we-do/> (last visited Feb. 7, 2019); *see also Greater Atlanta Pollinator Partnership (GAPP)*, U.S. FOREST SERV., <https://www.fs.fed.us/working-with-us/citizen-science/greater-atlanta-pollinator-partnership-gapp> (last visited Feb. 7, 2019).

The University of Georgia’s citizen science CyanoTracker platform, which is funded by the National Science Foundation’s (“NSF”) Cyber-Innovation for Sustainability Science and Engineering (“CyberSEES”) program, allows the public to easily provide actionable information on harmful algal blooms. *The CyanoTracker Project, About Us*, CYRANO TRACKER, <http://www.cyanotracker.uga.edu/about-us/> (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Law:

“A person commits an offense if, without the consent of the owner, the person . . . enters or remains on an animal facility [or crop facility] with the intent to disrupt or damage the enterprise conducted at the [] facility, and the person:

- (A) Had notice that the entry was forbidden;
- (B) Knew or should have known that the [] facility was or had closed to the public; or
- (C) Received notice to depart but failed to do so.” Ga. Code § 4-11-32(c)(1) (animal facility) & (c.1)(1) (crop facility).

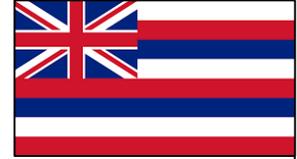
“‘Animal facility’ includes any vehicle, building, structure, pasture, paddock, pond, impoundment, or premises where an animal is kept, handled, housed, exhibited, bred, or offered for sale and any office, building, or structure where records or documents relating to an animal or to animal research, testing, production, or education are maintained.” *Id.* § 4-11-31(3).

	<p>“‘Crop facility’ means any field, building, greenhouse, structure, or premises where crops are grown or offered for sale and any office, building, or structure where records, documents, or electronic data relating to crops or crop research, testing, production, or education are maintained.” <i>Id.</i> § 4-11-31(5.2).</p> <p>Violations of subsection (c) or (c.1) of section 4-11-32 constitute a misdemeanor¹⁷⁰. <i>Id.</i> § 4-11-33(b).</p>
Scientific Collecting Permit:	<p>“It shall be unlawful for any person to take, possess, or transport any of the wildlife of this state, or the plumage, skin, or body thereof, or the nests or eggs of the same for scientific purposes without obtaining a scientific collecting permit[.]” Ga. Code § 27-2-12(a); <i>see also</i> Ga. Comp. R. & Regs. 391-4-9-.01; <i>Scientific Collecting Permit, Special Permits</i>, GA. DEP’T OF NAT. RESOURCES, https://gadnrle.org/special-permits (last visited Feb. 7, 2019).</p>
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No. A person is guilty of trespass if that person enters the land or premises of another person “after receiving . . . notice from the owner” or rightful occupant that such entry is forbidden. Ga. Code § 16-7-21(b). The statute does not define “notice,” but courts have reflected that notice must be “reasonable under the circumstances” and “sufficiently explicit to appraise the trespasser what property the trespasser is forbidden to enter.” <i>State v. Harper</i>, 810 S.E.2d 484, 485–86 (Ga. 2018) (quoting <i>Rayburn v. State</i>, 300 S.E.2d 499, 499–500 (Ga. 1983)). However, notice “need not be express to inform a would-be trespasser that entry is forbidden.” <i>See id.</i> (finding a locked door “sufficiently explicit” notice for the purpose of section 16-7-21(b)).</p>
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Laws:	
Preemption:	<p>“(b) Any ordinance, resolution, regulation, or policy of any county, municipality, or other political subdivision of this state regulating the testing or operation of unmanned aircraft systems shall be deemed preempted and shall be null, void, and of no force and effect; provided, however, that a county, municipality, or other political subdivision of this state may:</p> <ol style="list-style-type: none"> (1) Enforce any ordinance that was adopted on or before April 1, 2017; (2) Adopt an ordinance that enforces Federal Aviation Administration restrictions; or (3) Adopt an ordinance that provides for or prohibits the launch or intentional landing of an unmanned aircraft system from or on its public property except with respect to the operation of an unmanned aircraft system for commercial purposes.

¹⁷⁰ Misdemeanors may be punished by: (1) a fine not to exceed \$1,000 or by confinement in a county or other jail for a total term not to exceed 12 months, or both; or (2) confinement under the jurisdiction of the Board of Corrections in a state probation detention center for no more than 12 months. Ga. Code § 17-10-3(a)(1)-(2).

	(c) The state, through agency or departmental rules and regulations, may provide for or prohibit the launch or intentional landing of an unmanned aircraft system from or on its public property.” Ga. Code § 6-1-4. No such regulations exist to date.
State Parks:	“Drone operation is prohibited in Georgia’s State Parks and Historic Sites.” <i>Drones, Park Rules & Regulations</i> , GA. DEP’T OF NAT. RESOURCES STATE PARKS & HISTORIC SITES, https://gastateparks.org/ParkRules (last visited Feb. 7, 2019).
Stalking Laws:	
Criminal Law:	“A person commits the offense of stalking when he or she follows, places under surveillance, or contacts another person at or about a place or places without the consent of the other person for the purpose of harassing and intimidating the other person.” Ga. Code § 16-5-90(a).
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	“Except when otherwise specifically provided by rule or statute, pleadings need not be verified or accompanied by affidavit.” Ga. Code § 9-11-11(b).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility shall be satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Ga. Code § 24-9-901(a).
Expert Testimony:	The <i>Daubert</i> interpretation of Rule 702 [Ga. Code § 24-7-702] applies in civil suits only; in criminal cases, the court applies <i>Harper v. State</i> . See <i>Vaughn v. State</i> , 646 S.E.2d 212, 215 (Ga. 2007) (citing <i>Carlson v. State</i> , 634 S.E.2d 410, 414 (Ga. Ct. App. 2006)). Under Harper, the trial judge “determines whether a procedure or technique has reached a scientific stage of verifiable certainty” based on available evidence, and once “a procedure has been recognized in a substantial number of courts, a trial judge may judicially notice its level of verifiable certainty.” <i>Carlson</i> , 634 S.E.2d at 413.

Hawaii



Ongoing Projects:

<p>Federal Project(s) Operating in the State:</p>	<p>The U.S. Environmental Protection Agency (“EPA”) sponsors the Hawaii Island Volcanic Smog Sensor Network (“HI-Vog”), a project that aims to develop and deploy a community-based air quality sensor network across Hawaii Island to measure sulfur dioxide and fine particulate matter levels. <i>The Hawai’i Island Volcanic Smog Sensor Network (HI-Vog): Tracking Air Quality and Community Engagement Near a Major Emissions Hotspot</i>, U.S. ENVTL. PROTECTION AGENCY, https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/10741/report/0 (last visited Feb. 7, 2019); <i>see also</i> Home, HAW. ISLAND AIR QUALITY NETWORK, http://www.mit.edu/~jhkroll/hawaii/index.htm (last visited Feb. 7, 2019).</p> <p>The U.S. Geological Survey (“USGS”) recruited volunteers to install digital seismographs connected to local internet networks in private homes, businesses, public buildings, and schools in multiple states, including Hawaii, to monitor ground movement during earthquakes. <i>NetQuakes</i>, U.S. GEOLOGICAL SURV., https://earthquake.usgs.gov/monitoring/netquakes (last visited Feb. 7, 2019).</p> <p>The National Oceanic and Atmospheric Administration (“NOAA”) and Maui County sponsor Hui O Ka Wai Ola (Association of the Living Waters), a group of volunteers and scientists who test for sediments, nutrients, and other pollutants from land-based sources that might harm water quality. Home, HUI O KA WAI OLA, https://www.huiokawaiola.com/ (last visited Feb. 7, 2019).</p>
<p>State Project(s):</p>	<p>The Hawaii Legislature has established a Hawaii Unmanned Aerial Systems Test Site as part of the Pan-Pacific Unmanned Aerial Systems Test Range Complex. Haw. Rev. Stat. § 201-72.7. In establishing the test site, the legislature cited the many “existing and potential civilian uses of unmanned aerial systems,” including watershed management, surveys, agricultural monitoring, air quality monitoring, flood and pollution control, and land use surveys. S. 661, 28th Leg. (Haw. 2015) (enacted).</p>

Collection of Information:

<p>Scientific Collection Permits:</p>	<p>Depending on the research activity and location, one or more permits may be required to study plants and animals in Hawaii. <i>See Permit Guidelines</i>, HAW. DIVISION OF FORESTRY & WILDLIFE, http://dlnr.hawaii.gov/dofaw/permits/ (last visited Feb. 7, 2019); <i>see also</i> Haw. Rev. Stat. § 183D-6(b); Haw. Code R. 13-104-20.</p>
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Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No. Simple trespass requires that a person “knowingly enters or remains unlawfully in or upon premises” owned by another. Haw. Rev. Stat. § 708-815(1). While an individual may commit simple trespass despite lack of notice, the offense is only a violation, subject to a maximum fine of \$1000. <i>Id.</i> § 708-815(2), § 706-640(1)(e). “A violation does not constitute a crime.” <i>Id.</i> § 701-107(5).</p> <p>A person commits second-degree criminal trespass if they knowingly enter or remain unlawfully on a premises “enclosed in a manner designed to exclude intruders” or a commercial premises after a reasonable warning or request to leave by the owner or lessee or a police officer. <i>Id.</i> § 708-814(1)(a)-(b). Second-degree criminal trespass also covers entering or remaining on agricultural land or unimproved or unused land without the permission of the owner or lawful possessor if that land is fenced or secured in a manner designed to exclude or otherwise bears visible signage designed to exclude. <i>Id.</i> § 708-814(1)(c)-(d). Criminal trespass in the second degree is a petty misdemeanor¹⁷¹. <i>Id.</i> § 708-814(3).</p>
Criminal Trespass onto State Lands:	<p>A person commits trespass in or upon any improved state lands when: (i) The land is closed to public use and its closure hours are posted on a sign or signs on the improved state land, and after a request to leave is made by any law enforcement officer the person remains in or upon the land; or (ii) The land is not open to the public and there are signs that are sufficient to give reasonable notice that read: ‘Government Property - No Trespassing’” Haw. Rev Stat. § 708-814.7(1)(a). A violation of this section is a petty misdemeanor¹⁷². <i>Id.</i> §708-814.7(2).</p>
Limitations:	<p>It is a defense against trespass that “the defendant entered upon and passed along or over established and well-defined roadways, pathways, or trails leading to public beaches over government lands, whether or not under lease to private persons.” Haw. Rev. Stat. § 708-816.</p>
Drone Laws:	
State Parks:	<p>Within the limits of any park, it is a violation for any person, wherever signs are posted prohibiting the activity, to fly drones. Haw. Code R. 15-210-13(c)(4). Visitors may only fly drones in areas specifically designated for that purpose. <i>See id.</i> 15-210-13(d)(2); <i>see also Hawai’i State Park Rules</i>, HAW. DEP’T OF NAT. RESOURCES, http://dlnr.hawaii.gov/dsp/park-rules/ (last visited Feb. 7, 2019).</p>
Stalking Laws:	
Criminal Law:	<p>“A person commits the offense of harassment by stalking if, with intent to harass, annoy, or alarm another person, or in reckless disregard of the risk thereof, that person engages in a course of conduct involving pursuit, surveillance, or nonconsensual contact upon the other person on more than one occasion without legitimate purpose.” Haw. Rev. Stat. § 711-1106.5(1).</p>

¹⁷¹ A prison sentence for a petty misdemeanor may not exceed 30 days, Haw. Rev Stat. § 706-663, and the fine for such an offense may not exceed \$1,000, *id.* § 706-640(1)(e).

¹⁷² Sentence and fine limits are explained *supra* note 171.

Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Haw. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Haw. Rev. Stat. § 626-1(a), Haw. R. Evid. 901(a).
Expert Testimony:	Though the court has not adopted the <i>Daubert</i> standard, it finds it instructive (because the Hawaii Rules of Evidence are modeled on the Federal Rules of Evidence) and looks to reliability and relevance as the “touchstones of admissibility for expert testimony.” <i>State v. Vliet</i> , 19 P.3d 42, 53–54 (Haw. 2001) (citing <i>Kumho Tire Co. v. Carmichael</i> , 526 U.S. 137, 149–50 (1999)); see also <i>State v. Fukusaku</i> , 946 P.2d 32, 43 (Haw. 1997).

Idaho



Ongoing Projects:

Federal Project(s) Operating in the State: The U.S. Environmental Protection Agency sponsors the IDAH20 Master Water Stewards program, which the University of Idaho Extension operates. See *IDAHO20*, U. OF IDAHO, <https://www.uidaho.edu/extension/idah20> (last visited Feb. 7, 2019). The program trains volunteers about regional water quality issues and monitoring protocols. *Id.* All data collected through the program is made available in a public database. See *Water Quality Database*, IDAH20, U. OF IDAHO, <http://www.uidaho.edu/extension/idah20/database> (last visited Feb. 7, 2019).

The Multi-Species Baseline Initiative (“MBI”), which is managed by the Idaho Department of Fish and Game and partly funded by the U.S. Fish & Wildlife Service, monitors wildlife and microclimate across the Idaho Panhandle and adjoining mountain ranges. *Multi-species Baseline Initiative*, IDAHO DEP’T OF FISH & GAME, <https://idfg.idaho.gov/baseline> (last visited Feb. 7, 2019). “Citizen scientists have assisted MBI by building slug traps, building radiation shields for climate monitoring stations, prepping bait for bait stations, and maintaining bait stations in the field.” Michael Lucid, *Citizen Science and MBI*, IDAHO DEP’T OF FISH & GAME (June 17, 2012), <https://idfg.idaho.gov/blog/2012/06/citizen-science-and-mbi>.

State Project(s): Through the Citizen Volunteer Monitoring Program, the Idaho Department of Environmental Quality (“DEQ”) uses volunteer data for “education, problem identification, and decision-making.” IDAHO DEP’T OF ENVTL. QUALITY, IDAHO’S CITIZEN VOLUNTEER MONITORING PROGRAM 2 (2013), http://www.deq.idaho.gov/media/1060462-citizen_volunteer_monitoring_program.pdf. In order to participate, volunteers must attend a training run by DEQ. See *id.*; see also *Volunteer Monitoring, Monitoring and Assessment*, IDAHO DEP’T OF ENVTL. QUALITY, <http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/> (last visited Feb. 7, 2019).

The Idaho Department of Fish and Game welcomes volunteer observations of animals, rare plants, grizzly bears and wolves. See *Share Your Observations!*, IDAHO DEP’T OF FISH & GAME, <https://idfg.idaho.gov/species/observations> (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Law: In February 2014, Idaho enacted an Ag-Gag law criminalizing “interference with agricultural production.” See Idaho Code § 18–7042. Specifically, a person commits the crime of interference with agricultural production if the person knowingly:

	<p>(a) Is not employed by an agricultural production facility and enters an agricultural production facility by force, threat, misrepresentation or trespass;</p> <p>(b) Obtains records of an agricultural production facility by force, threat, misrepresentation or trespass; ... [or]</p> <p>(d) Enters an agricultural production facility that is not open to the public and, without the facility owner’s express consent or pursuant to judicial process or statutory authorization, makes audio or video recordings of the conduct of an agricultural production facility’s operations....” <i>Id.</i> § 18–7042(1).</p> <p>In January 2018, the Ninth Circuit found that sections (a) and (d) were unconstitutional as they violated the First Amendment’s protection of free speech. <i>Animal Legal Def. Fund v. Wasden</i>, 878 F.3d 1184, 1205 (9th Cir. 2018). However, the court preserved section (b). <i>See id.</i></p> <p>“A person found guilty of committing the crime of interference with agricultural production shall be guilty of a misdemeanor and shall be punished by a term of imprisonment of not more than one (1) year or by a fine not in excess of five thousand dollars (\$5,000), or by both such fine and imprisonment.” Idaho Code § 18–7042(3).¹⁷³</p>
Scientific Collection Permit:	A permit from the Department of Fish and Game is required for scientific collecting, banding, or possession of wildlife. <i>See Wildlife, License Applications and Forms</i> , IDAHO DEP’T OF FISH & GAME, https://idfg.idaho.gov/license/applications (last visited Feb. 7, 2019).
Drone Law:	<i>See infra</i> “Drone Laws.”
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. A person commits criminal trespass if that person enters or remains on the property of another without permission, knowing or with reason to know that such presence is not permitted. Idaho Code § 18-7008(2)(a). A person has reason to know that presence is not permitted if the property is cultivated, fenced or otherwise enclosed in a manner that a reasonable person would recognize as delineating a private property boundary; or posted with conspicuous “no trespassing” signs or bright orange or fluorescent paint at all property corners and boundaries. <i>Id.</i>
Drone Laws:	
Surveillance Law:	“Absent a warrant, and except for emergency response for safety, search and rescue or controlled substance investigations, no person, entity or state agency shall use an unmanned aircraft system to intentionally conduct surveillance of, gather evidence or collect information about, or photographically or

¹⁷³ An individual convicted under this section is also required to “make restitution to the victim of the offense in accordance with the terms of section 19-5304, Idaho Code. Provided however, that such award shall be in an amount equal to twice the value of the damage resulting from the violation of this section.” Idaho Code § 18–7042(4).

	<p>electronically record specifically targeted persons or specifically targeted private property including, but not limited to:</p> <p>(i) An individual or a dwelling owned by an individual and such dwelling’s curtilage, without such individual’s written consent;</p> <p>(ii) A farm, dairy, ranch or other agricultural industry without the written consent of the owner of such farm, dairy, ranch or other agricultural industry.” Idaho Code § 21-213(2)(a).</p> <p>An individual or entity whose privacy is violated under this section may bring a civil cause of action against the violator and is “entitled to recover from any such person, entity or state agency damages in the amount of the greater of one thousand dollars (\$1,000) or actual and general damages, plus reasonable attorney’s fees and other litigation costs reasonably incurred.” <i>Id.</i> § 21-213(3).</p>
Stalking Laws:	
Criminal Law:	A person commits the crime of stalking in the second degree if that person “knowingly and maliciously” engages in conduct that either “seriously alarms, annoys or harasses the victim and is such as would cause a reasonable person substantial emotional distress,” or “would cause a reasonable person to [fear] death or physical injury” of themselves or a family or household member. Idaho Code § 18-7906(1).
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.” Idaho R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Idaho R. Evid. 901.
Expert Testimony:	<p>Idaho has not adopted the <i>Daubert</i> standard for admissibility of an expert’s testimony, but has used some of <i>Daubert</i>’s standards in assessing whether the basis of an expert’s opinion is scientifically valid. <i>Weeks v. E. Idaho Health Servs.</i>, 153 P.3d 1180, 1184 (Idaho 2007) (citing <i>Swallow v. Emergency Med. of Idaho, P.A.</i>, 67 P.3d 68, 74 n. 1 (Idaho 2003)).</p> <p>Under Idaho Rule of Evidence 702 and <i>Merwin</i>, expert testimony is admissible where it will “assist the trier of fact to understand the evidence or to determine a fact in issue.” <i>State v. Hall</i>, 419 P.3d 1042, 1077 (Idaho 2018) (citing <i>State v. Merwin</i>, 962 P.2d 1026, 1030 (Idaho 1998)) (internal quotation marks omitted).</p>

Illinois



Ongoing Projects:

Federal Project(s)
Operating in the
State:

The American Woodcock Singing-Ground Survey, a citizen science monitoring project managed by the U.S. Fish & Wildlife Service, is meant to provide data on woodcock population trends for states, provinces, management regions, and the continent. *See American Woodcock*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/birds/surveys-and-data/webless-migratory-game-birds/american-woodcock.php> (last visited Feb. 7, 2019). The project is operating in Illinois. *See American Woodcock Singing-ground Survey*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/182/#> (last visited Feb. 7, 2019).

Shared Air/Shared Action (SA₂): Community Empowerment through Low-Cost Air Pollution Monitoring is an environmental justice-focused citizen air monitoring program sponsored by the U.S. Environmental Protection Agency and managed by Kansas State University. *See Shared Air/Shared Action (SA₂): Community Empowerment through Low-Cost Air Pollution Monitoring*, KAN. STATE U., <https://www.engg.ksu.edu/chsr/SA2%20Air%20Monitoring%20Project> (last visited Feb. 7, 2019). The program is located in Chicago, Illinois. *See id.*

State Project(s):

Citizens Observing and Surveying the Shoreline (“COASTS”) is a citizen science monitoring project that trains volunteers to collect beach topography data along Illinois’ Lake Michigan shoreline. *See About COASTS*, COASTS – CITIZENS OBSERVING AND SURVEYING THE SHORELINE, <https://publish.illinois.edu/lakemichigancoasts/history-of-coasts/> (last visited Feb. 7, 2019). COASTS is “a collaborative project between the Great Lakes Coastal Geology Research Group at the Illinois State Geological Survey of the Prairie Research Institute – University of Illinois at Urbana-Champaign and the Illinois Department of Natural Resources’ Coastal Management Program.” *Welcome to COASTS!*, COASTS – CITIZENS OBSERVING AND SURVEYING THE SHORELINE, <https://publish.illinois.edu/lakemichigancoasts/> (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Law:

“It shall be unlawful for any person:

- (3) to obtain access to an animal facility by false pretenses for the purpose of performing acts not authorized by that facility;
- (4) to enter into an animal facility with an intent to destroy, alter, duplicate, or obtain unauthorized possession of records, data, materials, equipment, or animals;
- (6) to enter or remain on an animal facility with the intent to commit an act prohibited under this Section.” 720 Ill. Comp. Stat. 5/48-2(c).

“Animal facility” means “any facility engaging in . . . agricultural production of or involving the use of animals including any organization with a primary

	<p>purpose of representing livestock production or processing, any organization with a primary purpose of promoting or marketing livestock or livestock products, . . . and any organization with a primary purpose of representing any such person, organization, or institution. ‘Animal facility’ shall include the owner, operator, and employees of any animal facility and any premises where animals are located.” <i>Id.</i> 5/48-2(a).</p> <p>A violation of subsection (c) constitutes a Class 4 felony.¹⁷⁴ <i>Id.</i> 5/48-2(d)(1). The penalties increase when damages exceed \$300. <i>Id.</i></p>
Research Permits:	<p>Depending on the research activity, wildlife status, and location of research (<i>e.g.</i>, State Park or Nature Reserve), different permits may be required. <i>See Research Permits</i>, ILL. DEP’T OF NAT. RESOURCES, https://www.dnr.illinois.gov/conservation/naturalheritage/pages/researchpermits.aspx (last visited Feb. 7, 2019); Ill. Admin. Code tit. 17, § 520.20.</p>
Trespassing Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No, criminal liability for trespass attaches only after having received notice.</p> <p>“A person commits criminal trespass to real property when he or she . . . (2) enters upon the land of another, <i>after receiving, prior to the entry, notice</i> from the owner or occupant that the entry is forbidden; (3) remains upon the land of another, <i>after receiving notice</i> from the owner or occupant to depart; . . . (4) enters a field used or capable of being used for growing crops, an enclosed area containing livestock, an agricultural building containing livestock, or an orchard . . . <i>after receiving, prior to the entry, notice</i> from the owner or occupant that the entry is forbidden or remains upon or in the area after receiving notice from the owner or occupant to depart.” 720 Ill. Comp. Stat. 5/21-3(a)(emphasis added).</p> <p>Such notice is given if communicated personally or if “a printed or written notice forbidding . . . entry has been conspicuously posted or exhibited at the main entrance to the land or the forbidden part thereof.” <i>Id.</i> 5/21-3(b).</p>
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Law:	
Hunter or Fisherman Interference:	<p>“A person commits hunter or fisherman interference when he or she intentionally or knowingly . . . uses a drone in a way that interferes with another person’s lawful taking of wildlife or aquatic life.” 720 Ill. Comp. Stat. 5/48-3(b)(10).</p> <p>A violation of this paragraph is a Class A misdemeanor¹⁷⁵. <i>Id.</i> 5/48-3(d). Furthermore, the court will revoke the hunting, fishing, or trapping privilege,</p>

¹⁷⁴ A Class 4 felony is punishable by a maximum fine of \$25,000, 730 Ill. Comp. Stat. 5/5-4.5-50(b), and/or imprisonment not to exceed 3 years, *id.* 5/5-4.5-45(a).

¹⁷⁵ A Class A misdemeanor is punishable by a maximum fine of \$2,500 and/or imprisonment not to exceed 1 year. *See* 730 Ill. Comp. Stat. 5/5-4.5-55(a) & (e).

	license or permit of any person convicted of violating any provision of this section for 1 to 5 years. <i>Id.</i>
Preemption:	“To the extent that State-level oversight does not conflict with federal laws, rules, or regulations, the regulation of an unmanned aircraft system is an exclusive power and function of the State. No unit of local government, including home rule unit, may enact an ordinance or resolution to regulate unmanned aircraft systems.... This Section does not apply to any local ordinance enacted by a municipality of more than 1,000,000 inhabitants.” 620 Ill. Comp. Stat. 5/42.1(b).
Stalking Laws:	
Criminal Law:	“A person commits stalking when he or she knowingly engages in a course of conduct directed at a specific person, and he or she knows or should know that this course of conduct would cause a reasonable person to: <ul style="list-style-type: none"> (1) fear for his or her safety or the safety of a third person; or (2) suffer other emotional distress.” 720 Ill. Comp. Stat. 5/12-7.3(a).¹⁷⁶
Use of Information:	
Although our research is incomplete, these provisions could be construed to allow the use of information collected by citizens.	
Explicitly Allows within Limit:	Law enforcement agencies can use drone information voluntarily submitted by private third parties, 725 Ill. Comp. Stat. 167/40(b), but the data must be deleted after 30 days unless there is a reasonable suspicion that the information contains evidence of a crime or the information is relevant to an ongoing investigation or trial, <i>id.</i> 167/20. A law enforcement agency is not permitted to disclose any information acquired from a drone, except that an agency supervisor may share it with other agencies only if there is a reasonable suspicion that it contains evidence of a crime or only if the information is relevant to an ongoing investigation or trial. <i>See id.</i> 167/25.
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim is “is well grounded in fact.” Ill. Sup. Ct. R. 137(a).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Ill. R. Evid. 901(a).
Expert Testimony:	<i>Frye</i> standard, but only for “new” or “novel” evidence. <i>See In re Commitment of Simons</i> , 821 N.E.2d 1184, 1188-91 (Ill. 2004) (“[T]he Frye test applies only to ‘new’ or ‘novel’ scientific methodologies.”).

¹⁷⁶ In 2017, the Illinois Supreme Court held that “the terms of subsection (a) of the stalking and cyberstalking statutes violate the first amendment because they are overbroad in that they impermissibly infringe on the right to free speech.” *People v. Relford*, 104 N.E.3d 341, 358 (Ill. 2017). Specifically, the court found these terms unconstitutional as the definition of “course of conduct” included “communicates to or about,” which the court found made the law overly broad such that it caught protected speech. *Id.* at 355-56. Accordingly, the Illinois Supreme Court severed the “communicates to or about” language from the section. *Id.* at 358.

Indiana



Ongoing Projects:

<p>Federal Project(s) Operating in the State:</p>	<p>The National Park Service (“NPS”) hosts multiple citizen science projects at Indiana Dunes National Lakeshore:</p> <ul style="list-style-type: none"> • The Dragonfly Mercury Project uses citizen scientist volunteers to collect dragonfly larvae to assess mercury levels in the water. <i>See Citizen Science, Indiana Dunes</i>, NAT’L PARK SERV., https://www.nps.gov/indu/getinvolved/citizen-science.htm (last visited Feb. 7, 2019). • Climate Effects on the Culture and Ecology of Sugar Maple: Under this project volunteers collect sap and test sugar content to better understand the effects of climate change on sugar maple trees in the region. <i>See id.</i> • The FeederWatch Program uses volunteers to record and identify birds at Indiana Dunes, which helps “scientists determine if certain birds are increasing or decreasing in population, potentially identifying at-risk species of bird.” <i>Id.</i>
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<p>State Project(s):</p>	<p>The Indiana Department of Environmental Management (“IDEM”) is tasked with creating a volunteer water quality monitoring program. Ind. Code § 14-25-7-12.5; <i>see also infra</i> “Use of Information.” Hoosier Riverwatch is a volunteer water quality monitoring program sponsored by IDEM that has been operating since 1994. <i>See Hoosier Riverwatch</i>, IND. DEP’T OF ENVTL. MGMT., https://www.in.gov/idem/riverwatch/ (last visited Feb. 7, 2019); <i>see also</i> HOOSIER RIVERWATCH, http://www.hoosierriverwatch.com/ (last visited Feb. 7, 2019).</p> <p>The Indiana Clean Lakes Program is a volunteer water monitoring and education program developed by IDEM’s Office of Water Quality and administered through Indiana University’s School of Public and Environmental Affairs. <i>See Indiana Clean Lakes Program</i>, IND. U., https://clp.indiana.edu/ (last visited Feb. 7, 2019).</p> <p>The Indiana Department of Natural Resources (“IDNR”) hosts the Summer Bat Roost Monitoring Project, which “uses volunteers to collect information on the distribution, occupancy and abundance of bat colonies throughout Indiana.” <i>Summer Bat Roost Monitoring Project</i>, IND. DEP’T OF NAT. RESOURCES, https://www.in.gov/dnr/fishwild/8519.htm (last visited Feb. 7, 2019).</p>
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Collection of Information:

<p>Surveillance Law:</p>	<p>“A person who knowingly or intentionally places a camera or electronic surveillance equipment that records images or data of any kind while unattended on the private property of another person without the consent of the owner or</p>
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	tenant of the private property commits a Class A misdemeanor ¹⁷⁷ .” Ind. Code § 35-46-8.5-1(b).
Research Permit:	“A Scientific Purposes License is required by state law in Indiana Code 14-22-22 for activities pertaining to the capture/handling/collection of wild animals for scientific purposes, including scientific education.” <i>Scientific Collectors/Purposes License</i> , IND. DEP’T OF NAT. RESOURCES, https://www.in.gov/dnr/fish/wild/7671.htm (last visited Feb. 7, 2019).
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. An element of trespass is that the intruder be “denied entry” by the owner or the owner’s agent. Ind. Code § 35-43-2-2(b)(1). A person may be “denied entry” by notice against trespassing that is personally communicated, posted by a sign “likely to come to the attention of the public,” or identified by “purple marks on trees or posts around the area where entry is denied” <i>Id.</i> § 35-43-2-2(c)(1), (2) & (4).
Trespass on Agricultural Property:	“A person who...not having a contractual interest in the property, knowingly or intentionally enters the...property of an agricultural operation that is used for the production, processing, propagation, packaging, cultivation, harvesting, care, management, or storage of an animal, plant, or other agricultural product, including any pasturage or land used for timber management, without the consent of the owner of the agricultural operation or an authorized person” is guilty of criminal trespass—a class A misdemeanor. Ind. Code § 35-43-2-2(b)(5)(A). If a person trespasses on the property of an agricultural operation and knowingly or intentionally causes property damage, the offense is a Level 6 felony ¹⁷⁸ if the property damage is between \$750 and \$50,000 and a Level 5 felony ¹⁷⁹ if the property damage is at least \$50,000. <i>Id.</i> § 35-43-2-2(b)(8).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
Aerial Harassment Law:	“A person who operates an unmanned aerial vehicle in a manner that is intended to subject another person to harassment commits remote aerial harassment, a Class A misdemeanor.” Ind. Code § 35-45-10-6.
State Parks:	“A person must not... knowingly land, taxi, take off, park, or moor on DNR property an unmanned motor-driven airborne device; except at a site designated for that purpose or pursuant to a license.” 312 Ind. Admin. Code. § 8-2-8(i)(2); <i>see also Drones and Motor-Driven Airborne Devices on DNR Properties</i> , IND. DEP’T OF NAT. RESOURCES, https://www.in.gov/dnr/9720.htm (last visited Feb. 7, 2019).

¹⁷⁷ A Class A misdemeanor is punishable by a maximum fine of \$5,000 and/or imprisonment not to exceed 1 year. *See* Ind. Code § 35-50-3-2.

¹⁷⁸ A Level 6 felony is punishable by a maximum fine of \$10,000 and/or imprisonment between 6 months and 2 ½ years. *See* Ind. Code § 35-50-2-7(b).

¹⁷⁹ A Level 5 felony is punishable by a maximum fine of \$10,000 and/or imprisonment between 1 and 6 years. *See* Ind. Code § 35-50-2-6(b).

Critical Infrastructure Laws:	
Trespass:	<p>Trespass committed on “a scientific research facility, on a key facility, [or] on a facility belonging to a public utility” is a Level 6 felony. Ind. Code § 35-43-2-2(b).</p> <p>A “key facility” means: a chemical manufacturing facility; refinery; electric utility facility; water intake structure or water treatment facility; natural gas facility; gasoline, propane, liquid natural gas, or other fuel terminal or storage facility; pulp or paper manufacturing facility; pharmaceutical manufacturing facility; or a hazardous waste storage, treatment, or disposal facility. <i>Id.</i> § 35-31.5-2-179.</p>
Stalking Laws:	
Criminal Law:	<p>“A person who stalks another person commits stalking[.]” Ind. Code § 35-45-10-5(a).</p> <p>“As used in this chapter, ‘stalk’ means a knowing or an intentional course of conduct involving repeated or continuing harassment of another person that would cause a reasonable person to feel terrorized, frightened, intimidated, or threatened and that actually causes the victim to feel terrorized, frightened, intimidated, or threatened. The term does not include statutorily or constitutionally protected activity.” <i>Id.</i> § 35-45-10-1.</p>
Drone Law:	<i>See supra</i> “Drone Laws.”
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	IDEM is tasked with establishing “a program under which volunteers may monitor the water resource and provide monitoring data to the [Indiana Natural Resources Commission], [IDEM], and the United States Geological Survey.” Ind. Code § 14-25-7-12.5(a). Data collected through the program may be “collected and disseminated by the commission . . . and . . . used by the commission in conducting the continuing assessment of the availability of the water resource.” <i>Id.</i>
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground to support” the claim. Ind. R. Trial P. 11(A).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Ind. R. Evid. 901(a).
Expert Testimony:	Indiana courts find “ <i>Daubert</i> helpful, but not controlling, when analyzing testimony under Indiana Evidence Rule 702(b).” <i>See Turner v. State</i> , 953 N.E.2d 1039, 1050 (Ind. 2011).

Iowa



Ongoing Projects:

Federal Project(s) Operating in the State: CrowdHydrology, which is sponsored by the U.S. Geological Survey (“USGS”), gathers “information on stream stage or water levels from anyone willing to send [] a text message of the water levels at their local stream to collect spatially distributed hydrologic data.” *CrowdHydrology*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/129/#> (last visited Feb. 7, 2019); *see also How it Works*, CROWDHYDROLOGY, <http://www.crowdhydrology.com/about/how-it-works/> (last visited Feb. 7, 2019). This project is ongoing in Iowa. *See Locations, Iowa*, CROWDHYDROLOGY, <http://www.crowdhydrology.com/location/iowa/> (last visited Feb. 7, 2019).

Citizen Science: Water Monitoring, which is run by University of Iowa – IIHR-Hydroscience & Engineering and was awarded a grant by the National Science Foundation, is recruiting public volunteers to participate in a new study that will use a smartphone application to measure nitrate levels in the Clear Creek and Middle Cedar watersheds. *See Citizen Scientist Water Monitoring*, U. OF IOWA, <https://www.iuhr.uiowa.edu/cjones/citizen-scientist-water-monitoring/> (last updated May 4, 2018); *see also* Mikael Mulugeta, *Citizen Science: Water Monitoring*, U. OF IOWA (Jan. 8, 2018), <https://www.iuhr.uiowa.edu/blog/2018/01/08/citizen-science-water-monitoring/>.

State Project(s): The Iowa Department of Natural Resources (“IDNR”) discontinued its state-level volunteer water quality monitoring program: IOWATER. *See Volunteer Water Monitoring*, IOWA DEP’T OF NAT. RESOURCES, <https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Monitoring/Volunteer-Water-Monitoring> (last visited Feb. 7, 2019). In its place, IDNR launched a locally-led volunteer water monitoring program, which provides training, technical assistances, and equipment for locally-run programs around the State. *See id.*

IDNR operates the Volunteer Wildlife Monitoring Program (“VWMP”), in which volunteers monitor bird nests, frog and toad calls, and do acoustic monitoring of bats. *See Volunteer Wildlife Monitoring Program (VWMP)*, IOWA DEP’T OF NAT. RESOURCES, <http://www.iowadnr.gov/Conservation/Iowas-Wildlife/Volunteer-Wildlife-Monitoring> (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Law—Animal Facility: “A person shall not, without the consent of the owner . . . [e]nter onto or into an animal facility, or remain on or in an animal facility, if the person has notice¹⁸⁰ that the facility is not open to the public, if the person has an intent to . . . [d]isrupt operations conducted at the animal facility, if the operations directly

¹⁸⁰ Notice “may be in the form of a written or verbal communication by the owner, a fence or other enclosure designed to exclude intruders or contain animals, or a sign posted which is reasonably likely to come to the attention of an intruder and which indicates that entry is forbidden.” Iowa Code § 717A.2(1)(c)(2).

	<p>relate to agricultural production, animal maintenance, educational or scientific purposes, or veterinary care.” Iowa Code § 717A.2(1)(c)(1)(a).</p> <p>“A person who violates subsection 1, paragraph ‘c’, is guilty of an aggravated misdemeanor¹⁸¹.” <i>Id.</i> § 717A.2(3)(c). Private parties can also recover treble damages in a civil suit. <i>Id.</i> § 717A.2(2).</p>
Ag-Gag Law— Crop Operation Property:	<p>“A person shall not, without the consent of the owner... (a) willfully...damage a crop maintained on crop operation property... (b) exercise control over a crop...with an intent to deprive the owner of the crop...[or] (c)(1) enter onto or remain on crop operation property if the person has notice¹⁸² that [it] is not open to the public and [intends to disrupt the operation or destroy or damage any portion of a crop maintained on the property]. Iowa Code § 717A.3(1).</p> <p>A violation of paragraph (a) is an offense of criminal mischief,¹⁸³ a violation of paragraph (b) constitutes a class “D” felony,¹⁸⁴ and a violation of paragraph (c) is an aggravated misdemeanor. <i>Id.</i> § 717A.3(3).</p>
Ag-Gag Law — Agricultural Production Facility Fraud:	<p>“A person is guilty of agricultural production facility fraud if the person willfully... [o]btains access to an agricultural production facility by false pretenses.” Iowa Code § 717A.3A(1)(a).</p> <p>A violation of this section is a serious misdemeanor.¹⁸⁵ <i>Id.</i> § 717A.3A(2)(a).</p> <p>This law was ruled unconstitutional under the First Amendment in 2019. <i>Animal Legal Defense Fund et al. v. Reynolds</i>, Case No. 4:17-cv-00362, 2019 WL 140069 (S.D. Iowa Jan. 9, 2019).</p>
Permit to Collect Wildlife for Scientific or Academic Purposes:	<p>Permits are required before a scientist or other person can collect wildlife samples, either alive or dead. <i>See</i> Iowa Code § 481A.65; Iowa Admin. Code 571-111.1(481A); <i>Scientific Collectors and Permits</i>, IOWA DEP’T OF NAT. RESOURCES, http://www.iowadnr.gov/Conservation/Scientific-Collectors-Permits (last visited Feb. 7, 2019).</p>

¹⁸¹ An aggravated misdemeanor is punishable by a maximum fine of \$6,250 and/or imprisonment not to exceed 2 years. Iowa Code § 903.1(2).

¹⁸² Notice “may be in the form of a written or verbal communication by the owner, a fence or other enclosure designed to exclude intruders, or a sign posted which is reasonably likely to come to the attention of an intruder and which indicates that entry is prohibited.” Iowa Code § 717A.3(1)(c)(2).

¹⁸³ Depending on damages, criminal mischief may be classified between a simple misdemeanor and a class “C” felony. Iowa Code § 717A.3(3)(a); *see also id.* § 716.3(2) (Criminal Mischief in the First Degree); *id.* § 716.6(2) (Criminal Mischief in the Fourth and Fifth Degrees). A simple misdemeanor is punishable by a maximum fine of \$625 and/or imprisonment not to exceed 30 days. *Id.* § 903.1(1)(a). A class “C” felony is punishable by a maximum fine of \$10,000 and/or imprisonment not to exceed 10 years. *Id.* § 902.9(1)(d).

¹⁸⁴ A class “D” felony is punishable by a maximum fine of \$7,000 and/or imprisonment not to exceed 5 years. *Id.* § 902.9(1)(e).

¹⁸⁵ A serious misdemeanor is punishable by a maximum fine of \$1,875 and/or imprisonment not to exceed 1 year. Iowa Code § 903.1(1)(b).

Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. An intruder must have been “notified or requested to abstain from entering” the property of another for such entry to constitute trespass. Iowa Code § 716.7(2)(a)(2). Criminal trespass includes entering property “with the intent to . . . place . . . anything . . . inanimate” thereon. <i>Id.</i> § 716.7(2)(a)(1).
Public Utility Trespass:	Trespass includes “[e]ntering or remaining upon or in public utility property without lawful authority or without the consent of the public utility that owns, leases, or operates the public utility property.” Iowa Code § 716.7(2)(a)(6). A violation of this section is a class “D” felony. <i>Id.</i> § 716.8(6).
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Critical Infrastructure Laws:	
Sabotage Law:	“‘Critical Infrastructure Sabotage’ is an unauthorized and overt act intended to cause and having the means to cause, and in substantial furtherance of causing, a substantial and widespread interruption or impairment of a fundamental service rendered by the critical infrastructure.” Iowa Code § 716.11-12(2). This does not include accidental interruption caused by a citizen engaging in lawful acts, nor does it include agricultural operations. <i>Id.</i> “A person who commits critical infrastructure sabotage is guilty of a class ‘B’ felony, ¹⁸⁶ and . . . shall be punished by a fine [between \$85,000 and \$100,000].” <i>Id.</i> § 716.12.
Stalking Laws:	
Criminal Stalking	A person commits stalking when all of the following occur: “a. The person purposefully engages in a course of conduct directed at a specific person that would cause a reasonable person to feel terrorized, frightened, intimidated, or threatened or to fear that the person intends to cause bodily injury to, or the death of, that specific person or a member of the specific person’s immediate family. b. The person has knowledge or should have knowledge that a reasonable person would feel terrorized, frightened, intimidated, or threatened or fear that the person intends to cause bodily injury to, or the death of, that specific person or a member of the specific person’s immediate family by the course of conduct.” Iowa Code § 708.11(2).
Use of Information:	
Although our research is incomplete, these provisions could be construed to prohibit the use of information collected by citizens.	
Prohibitive by Effect:	In order to submit water quality data, volunteer monitoring groups must first submit a “volunteer water quality monitoring plan” for department approval at least 90 days before monitoring activities. Iowa Admin. Code 567-61.11(455B). The plan must include a “statement of intent[,]” the names of all participants, the duration of the monitoring effort, the “[l]ocation and frequency of sample

¹⁸⁶ In addition to the fine, a class “B” felon faces imprisonment not to exceed 25 years. Iowa Code § 716.12; *id.* § 902.9(1)(b).

	<p>collection[,]” the “[m]ethods of data collection and analysis[,]” and “[r]ecord keeping and data reporting procedures.” <i>Id.</i></p> <p>In addition to this, citizen-submitted data must be approved before it considered credible. Iowa Admin. Code 567-61.12(455B). To be approved, data must be submitted by a “qualified volunteer” who must request that it be deemed credible at the time of submission. <i>Id.</i> “[Q]ualified volunteers must have the training and experience to ensure quality assurance and quality control for the data being produced, or be under direct supervision of a person having such qualifications.” <i>Id.</i> 567-60.2(455B).</p> <p>While these regulations are in effect, it is unclear how they function under the new locally-led volunteer water monitoring program.</p>
Explicitly Prohibits:	<p>“Information obtained as a result of the use of an unmanned aerial vehicle is not admissible as evidence in a criminal or civil proceeding, unless the information is obtained pursuant to the authority of a search warrant, or unless the information is otherwise obtained in a manner that is consistent with state and federal law.” Iowa Code § 808.15.</p>
Evidentiary Standards:	
Pleading a Claim:	<p>Requires certification that the claim “is well grounded in fact.” Iowa R. Civ. P. 1.413(1).</p>
Authentication or Chain of Custody:	<p>“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Iowa R. Evid. 5.901(a).</p>
Expert Testimony:	<p>Ad Hoc Hall test; <i>Daubert</i> is instructive “[w]hen the scientific evidence is particularly novel or complex.” <i>See Raney v. Adams Labs., Inc.</i>, 778 N.W.2d 677, 685-86 (Iowa 2010); <i>see also State v. Hall</i>, 297 N.W.2d 80, 85 (Iowa 1980) (rejecting <i>Frye</i> test of general scientific acceptance).</p>

Kansas



Ongoing Projects:

State Project(s):	<p>Monarch Watch is a volunteer monitoring program based at the Kansas Biological Survey, University of Kansas. <i>See Monarch Watch</i>, U. OF KAN. BIOLOGICAL SURV., https://biosurvey.ku.edu/monarch-watch (last visited Feb. 7, 2019). Volunteers across the United States and Canada tag and track individual butterflies to assist scientists in studying monarch populations and migration. <i>See id.</i>; <i>see also</i> MONARCHWATCH.ORG, https://www.monarchwatch.org/ (last visited Feb. 7, 2019).</p> <p>The Kansas Department of Health and the Environment (“KDHE”) Environmental Interest Finder (“KEIF”) is an application that allows citizens to identify “environmental interest” sites around the State. <i>See Kansas Environmental Interest Finder (KEIF)</i>, KAN. DEP’T OF HEALTH & ENV’T, https://maps.kdhe.state.ks.us/keif/ (last visited Feb. 7, 2019). “Environmental Interest” includes many sources of pollution across different State agencies. <i>See id.</i> This is a potentially useful tool for citizen scientists.</p>
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Collection of Information:

Ag-Gag Law:	<p>“(c) No person shall, without the effective consent of the owner and with the intent to damage the enterprise conducted at the animal facility:</p> <ul style="list-style-type: none">(1) Enter an animal facility, not then open to the public, with intent to commit an act prohibited by this section;(2) remain concealed, with intent to commit an act prohibited by this section, in an animal facility;(3) enter an animal facility and commit or attempt to commit an act prohibited by this section; or(4) enter an animal facility to take pictures by photograph, video camera or by any other means. <p>(d)(1) No person shall ... enter or remain on an animal facility if the person...(A) Had notice¹⁸⁷ that the entry was forbidden....” Kan. Stat. § 47-1827.¹⁸⁸</p> <p>“Animal facility” “includes any vehicle, building, structure, research facility or premises where an animal is kept, handled, housed, exhibited, bred or offered for sale.” <i>Id.</i> § 47-1826(b).</p>
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¹⁸⁷ Notice can take the form of oral or written communication, fencing, or posted signs. Kan. Stat. § 47-1827(d)(2).

¹⁸⁸ A lawsuit was filed on December 4, 2018 by the Animal Legal Defense Fund (“ALDF”), Center for Food Safety (“CFS”), Shy 38, Inc., and Hope Sanctuary alleging that the Kansas Ag-Gag law violates the First Amendment. *See Complaint, Animal Legal Defense Fund v. Colyer*, No. 2:18-cv-02657, 2018 WL 6413303 (D. Kan. Dec. 4, 2018).

	Violation of subsection (c) is a class A, nonperson misdemeanor. ¹⁸⁹ <i>Id.</i> § 47-1827(g)(3). Violation of subsection (d) is a class B nonperson misdemeanor. ¹⁹⁰ <i>Id.</i> § 47-1827(g)(4). Private parties can also recover treble damages in civil suits. <i>Id.</i> § 47-1828.
Scientific Collection Permit:	“Any person wishing to collect any wildlife, protected by law or rules and regulations of the Secretary of the Department of Wildlife, Parks and Tourism, for scientific, educational, or exhibition purposes must obtain a Scientific, Educational, or Exhibition Permit[.]” <i>Education, Exhibition, Collection, and Salvage Permits</i> , KAN. DEP’T OF WILDLIFE, PARKS & TOURISM, https://ksoutdoors.com/Services/Education-Exhibition-Collection-and-Salvage-Permits (last visited Feb. 7, 2019); <i>see also</i> Kan. Admin. Regs. 115-18-3.
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. “Criminal trespass is entering or remaining upon or in any...[l]and, nonnavigable body of water, [or] structure, ... by a person who knows such person is not authorized or privileged to do so” and notice was given to the individual through personal communication, posted signs, fencing, or secured entry. Kan. Stat. § 21-5808(a)(1) (referencing Kan. Stat. § 32-1013).
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Laws:	
State Parks:	“Except for designated areas in several Kansas state parks, drone use is not allowed on [Kansas Department of Wildlife, Parks & Tourism (“KDWPT”)]-owned and managed lands without special permission from KDWPT Secretary. Within designated operating areas, drones may not be flown over people, structures, campgrounds or beaches. Drones may not be used to take fish, hunt or locate wounded or harvested game animals. Drones may be used to scout on land not owned or managed by KDWPT, but hunting is not allowed on the same day the aerial scouting occurs.” <i>Unmanned Aircraft Systems or Drones</i> , KAN. DEP’T OF WILDLIFE, PARKS & TOURISM, https://ksoutdoors.com/Hunting/Hunting-Regulations/New-for-2018/Unmanned-Aircraft-Systems-or-Drones (last visited Feb. 7, 2019).
Stalking Laws:	
Criminal Law:	“(a) Stalking is: (1) Recklessly engaging in a course of conduct targeted at a specific person which would cause a reasonable person in the circumstances of the targeted person to fear for such person’s safety, or the safety of a member of such person’s immediate family and the targeted person is actually placed in such fear; [or] (2) engaging in a course of conduct targeted at a specific person with knowledge that the course of conduct will place the targeted person in

¹⁸⁹ A class A misdemeanor is punishable by a maximum fine of \$2,500 and/or imprisonment not to exceed 1 year. Kan. Stat. § 21-6611(b)(1); *id.* § 21-6602(a)(1).

¹⁹⁰ A class B misdemeanor is punishable by a maximum fine of \$1,000 and/or imprisonment not to exceed 6 months. Kan. Stat. § 21-6611(b)(2); *id.* § 21-6602(a)(2).

	<p>fear for such person’s safety or the safety of a member of such person’s immediate family.” Kan. Stat. § 21-5427.</p> <p>Harassment, as an element of stalking, includes any action in the definition of harassment carried out through use of an unmanned aerial system over any dwelling or other place with a reasonable expectation of privacy. <i>Id.</i> § 60-31a02(d)(1).</p>
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.” Kan. Stat. § 60-211(b)(3).
Authentication or Chain of Custody:	“Authentication of a writing is required before it may be received in evidence. Authentication may be by evidence sufficient to sustain a finding of its authenticity or by any other means provided by law.” Kan. Stat. § 60-464.
Expert Testimony:	Section 60-456(b) and the <i>Daubert</i> standard. <i>See</i> Kan. Stat. § 60-456(b); <i>see also Manley v. Kansas Dep’t of Revenue</i> , 425 P.3d 375, at *6 (Kan. Ct. App. 2018) (“Kansas courts now apply the standard under [<i>Daubert</i>].”).

Kentucky



Ongoing Projects:

State Project(s):	<p>The Kentucky Department of Environmental Protection (“DEP”) runs a volunteer water quality monitoring program: Kentucky Water Watch. <i>See Kentucky Water Watch</i>, KY. DEP’T FOR ENVTL. PROTECTION, http://water.ky.gov/ww/Pages/default.aspx (last visited Feb. 7, 2019).</p> <p>The DEP supports the Kentucky River Watershed Watch, a non-profit water quality monitoring organization. <i>See Supporters</i>, KY. RIVER WATERSHED WATCH, http://www.uky.edu/krww/content/supporters (last visited Feb. 7, 2019).</p>
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Collection of Information:

Ag-Gag Law:	<p>“(3) A person commits an offense if, without the effective consent of the owner and with the intent to disrupt or damage the enterprise conducted at the animal facility, the person enters an animal facility, not then open to the public, with the intent to commit an act prohibited by this section, remains concealed, with the intent to commit an act prohibited by this section, in an animal facility, or enters an animal facility and commits or attempts to commit an act prohibited by this section.</p> <p>(4) A person commits an offense if, without the effective consent of the owner and with the intent to disrupt or damage the enterprise conducted at the animal facility, the person enters or remains on an animal facility, and the person had notice that the entry was forbidden, or received notice to depart but failed to do so.” Ky. Rev. Stat. § 437.420.</p> <p>Violators are “subject to a fine of not more than five thousand dollars (\$5,000) or imprison[ment] for not less than six (6) months but not more than one (1) year, or both, for each violation.” <i>Id.</i> § 437.429(1).</p> <p>“Animal facility” means “any vehicle, building, structure, or premises, where an animal or animal records are kept, handled, housed, exhibited, bred, or offered for sale” <i>Id.</i> § 437.410(2).</p>
Scientific Collection Permit:	<p>“The Scientific and Educational Collecting Permit authorizes the collecting and holding, even temporarily of wildlife for zoological, educational or scientific purposes.” <i>Scientific and Educational Collecting</i>, KY. DEP’T OF FISH & WILDLIFE RESOURCES, https://fw.ky.gov/Wildlife/Pages/Scientific-and-Educational-Collecting.aspx (last visited Feb. 7, 2019); <i>see also</i> Ky. Rev. Stat. § 148.029(3); <i>id.</i> § 433.877(1); 301 Ky. Admin. Regs. 4:070.</p>

Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No. Third degree criminal trespass requires that a person “<i>knowingly</i> enters or remains unlawfully in or upon premises.” Ky. Rev. Stat. § 511.080(1) (emphasis added). “A person who enters or remains upon unimproved and apparently unused land which is neither fenced nor otherwise enclosed does not commit criminal trespass unless notice against trespass is personally communicated to him by the owner of the land or some other authorized person or unless notice is given by posting in a conspicuous manner.” <i>Id.</i> § 511.090(4).</p> <p>If “notice against trespass is given by fencing or other enclosure,” entry upon such property constitutes trespass in the second degree. <i>Id.</i> § 511.070(1). Criminal trespass in the second degree is a Class B misdemeanor¹⁹¹. <i>Id.</i> § 511.070(2).</p>
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
Surveillance Law:	<p>“(3) Any recreational user may operate an unmanned aircraft system within this state, in compliance with 14 C.F.R. pt. 101.</p> <p>(4) Any institution of higher education, or school district, may use an unmanned aircraft system for educational, research, or testing purposes....</p> <p>(8) No evidence obtained or collected as the result of the use of an unmanned aircraft system shall be admissible as evidence in any civil, criminal, or administrative proceeding within this state for the purpose of enforcing state or local law, except for:</p> <p style="padding-left: 40px;">(a) Evidence collected as permitted by subsections (2) to (6) of this section; or</p> <p style="padding-left: 40px;">(b) Evidence which is offered against the owner or operator of an unmanned aircraft system to show misconduct....</p> <p>(10) Operation of an unmanned aircraft system in violation of subsection (2) or (3) of this section shall be a violation for the first offense and a Class B misdemeanor for the second or subsequent offense.” Ky. Rev. Stat. § 500.130.¹⁹²</p>
State Parks:	A permit is required to fly drones in Kentucky State Parks. <i>See Question: Can I fly a drone over a Kentucky State Park?, FAQ</i> , KY. STATE PARKS, https://parks.ky.gov/FAQ.html (last visited Feb. 7, 2019).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Trespass by Person:	<p>“A person commits the offense of trespass upon key infrastructure assets if he or she knowingly enters or remains unlawfully in or upon real property on which key infrastructure assets are located.” Ky. Rev. Stat. § 511.100(2)(a).</p> <p>Trespass upon key infrastructure assets is a Class B misdemeanor for the first</p>

¹⁹¹ A Class B misdemeanor is punishable by a fine up to \$250, Ky. Rev. Stat. § 534.040(2)(b), and/or imprisonment not to exceed 90 days, *id.* § 532.090(2).

¹⁹² A violation is punishable by a fine of up to \$250. Ky. Rev. Stat. § 534.040(2)(c). Class B misdemeanor sentence and fine limits are explained *supra* note 191.

	<p>offense. <i>Id.</i> § 511.100(3).</p> <p>“Key infrastructure assets” include, but are not limited to: (1) any critical node of a system used in the production or generation of electrical energy; (2) a petroleum refinery; (3) a rubber or hazardous chemical manufacturing facility; (4) a petroleum or hazardous chemical storage facility or terminal; (5) natural gas processing, fractionation, stabilization, and compressor station facilities, as well as above-ground pipelines and related facilities; and (6) a drinking water collection, treatment, or storage facility. <i>Id.</i> § 511.100(1)(a).</p>
Trespass by Drone:	<p>“A person commits the offense of trespass upon key infrastructure assets if he or she knowingly uses, or retains or authorizes a person to use, an unmanned aircraft system to fly above real property on which key infrastructure assets are located with the intent to cause harm or damage to or conduct surveillance of the key infrastructure asset without the prior consent of the owner, tenant, or lessee of the real property.” Ky. Rev. Stat. § 511.100(2)(b).</p> <p>Trespass upon key infrastructure assets is a Class B misdemeanor for the first offense. <i>Id.</i> § 511.100(3).</p>
Stalking Laws:	
Criminal Law:	<p>“A person is guilty of stalking in the second degree when he intentionally:</p> <p>(a) Stalks another person; and</p> <p>(b) Makes an explicit or implicit threat with the intent to place that person in reasonable fear of: 1. Sexual contact as defined in KRS 510.010; 2. Physical injury; or 3. Death.” Ky. Rev. Stat. § 508.150(1).</p>
Civil Law:	<p>“A civil action may be maintained under this section against any person who commits the conduct prohibited under KRS 508.140 or 508.150. A civil action may be maintained under this section whether or not the individual who is alleged to have violated KRS 508.140 or 508.150 has been charged or convicted of the alleged crime.” Ky. Rev. Stat. § 411.220.</p>
Use of Information:	
Explicitly Prohibits:	<i>See supra</i> “Drone Laws.”
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim is “is well grounded in fact.” Ky. R. Civ. P. 11.
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Ky. R. Evid. 901(a).
Expert Testimony:	Admissibility of expert testimony is governed by Kentucky Rule of Evidence 702 and the <i>Daubert</i> standard. <i>See Futrell v. Commonwealth</i> , 471 S.W.3d 258, 282-84 (Ky. 2015); <i>Mitchell v. Com.</i> , 908 S.W.2d 100, 101 (Ky. 1995) (“We adopt the standard of review set forth in <i>Daubert</i> .”), overruled in part by <i>Fugate v. Com.</i> , 993 S.W.2d 931 (Ky. 1999).

Louisiana



Ongoing Projects:

Federal Project(s): The Lafayette Engagement and Research Network (“LEaRN”) was awarded the U.S. Environmental Protection Agency’s Smart City Air Challenge in 2016. The project will use citizen science to demonstrate how communities can leverage IoT technology to monitor air quality. *See Learn About Air Quality, LAFAYETTE ENGAGEMENT AND RESEARCH NETWORK, <https://learnlafayette.com>* (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Law: “A. It shall be unlawful for any person:

(6) To knowingly obtain or exert unauthorized control, by theft or deception, over records, data, material, equipment, or animals of any animal research facility or animal management facility for the purpose of depriving the legal owner of an animal research facility or animal management facility of records, material, data, equipment, or animals or for the purpose of using, concealing, abandoning, or destroying such records, material, data, equipment, or animals.

(7) To possess or use records, material, data, equipment, or animals or in any way to copy or reproduce records or data of an animal research facility or animal management facility, knowing or reasonably believing such records, material, data, equipment, or animals to have been obtained by theft or deception or without authorization of that facility.

B.

(2) ‘Animal management facility’ as used herein means that portion of any vehicle, building, structure, or premises, where an animal is kept, handled, housed, exhibited, bred, or offered for sale, and any agricultural trade association properties. Animal management facility also means that portion of any vehicle, building, structure, premises, property, or equipment used in the conduction of authorized wildlife management practices, including but not limited to the control of animals that damage property, natural resources, or human health and safety.

C. Whoever violates any provision of this Section shall be fined not more than five thousand dollars or imprisoned, with or without hard labor, for not more than one year, or both.” La. Stat. § 14:228.

Scientific Collecting Permit: A permit is required to collect wildlife for scientific purposes. *See Scientific Collecting Permit, LA. DEP’T OF WILDLIFE & FISHERIES, <http://www.wlf.louisiana.gov/permit/scientific-collecting-permit>* (last visited Feb. 7, 2019).

Other Provisions: *See infra* “Drone Laws.”

Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>Yes. “B.(1) No person shall enter upon immovable property owned by another without express, legal, or implied authorization....</p> <p>J. Although not required by this Section, notice that entrance upon ...immovable property owned by another is prohibited may be indicated by ... [posted signs and purple marks on tress or posts].” La. Stat. § 14:63; <i>see also State in Interest of P.L.</i>, 81 So. 3d 983, 989 (La. App. 4th Cir. 2012) (“While [Defendant] argues that there were no signs posted on the abandoned house, there is no requirement that signs forbidding entrance be posted. Indeed, the law provides that ‘no person shall enter upon immovable property owned by another without express, legal, or implied authorization.’”).</p> <p>For the first offense, the fine shall be not less than \$100 and not more than \$500, or imprisonment for not more than 30 days, or both. La. Stat. § 14:63(G)(1).</p>
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
Surveillance of a Targeted Facility:	<p>Unlawful use of an unmanned aircraft system includes: “[t]he intentional use of an unmanned aircraft system to conduct surveillance of, gather evidence or collect information about, or photographically or electronically record a targeted facility without the prior written consent of the owner of the targeted facility.” La. Stat. § 14:337(A)(1).</p> <p>“Targeted facility” includes petroleum and alumina refineries; chemical and rubber manufacturing facilities; and nuclear power electric generation facilities. <i>Id.</i> § 14:337(B)(3).</p> <p>For a first offense, a person shall be fined not more than \$500, or imprisoned for not more than six months, or both. <i>Id.</i> § 14:337(E)(1).</p> <p><u>Exceptions:</u> This section does not apply to “[t]he operation of an unmanned aircraft by institutions of higher education conducting research, extension, and teaching programs in association with university sanctioned initiatives.” <i>Id.</i> § 14:337(D)(2).</p>
Wildlife Management Areas:	Operation of drones on wildlife management areas is prohibited. 76 La. Admin. Code Pt. XIX, § 111(G)(1)(o).
Critical Infrastructure Laws:	
Trespass:	<p>“Unauthorized entry of a critical infrastructure is any of the following:</p> <p>(1) The intentional entry by a person without authority into any structure or onto any premises, belonging to another, that constitutes in whole or in part a critical infrastructure that is completely enclosed by any type of</p>

	<p>physical barrier.</p> <p>(2) The use or attempted use of fraudulent documents for identification purposes to enter a critical infrastructure.</p> <p>(3) Remaining upon or in the premises of a critical infrastructure after having been forbidden to do so, either orally or in writing, by any owner, lessee, or custodian of the property or by any other authorized person. The intentional entry into a restricted area of a critical infrastructure which is marked as a restricted or limited access area that is completely enclosed by any type of physical barrier when the person is not authorized to enter that restricted or limited access area.” La. Stat. Ann. § 14:61(A).</p> <p>“Whoever commits the crime of unauthorized entry of a critical infrastructure shall be imprisoned with or without hard labor for not more than five years, fined not more than one thousand dollars, or both.” <i>Id.</i> § 14:61(C).</p> <p>“‘Critical infrastructure’ means any and all structures, equipment, or other immovable or movable property located within or upon chemical manufacturing facilities, refineries, electrical power generating facilities, electrical transmission substations and distribution substations, water intake structures and water treatment facilities, natural gas transmission compressor stations, liquified natural gas (LNG) terminals and storage facilities, natural gas and hydrocarbon storage facilities, transportation facilities, such as ports, railroad switching yards, pipelines, and trucking terminals, or any site where the construction or improvement of any facility or structure referenced in this Section is occurring.” <i>Id.</i> § 14:61(B)(1).</p>
Other Provisions:	<i>See supra</i> “Drone Laws.”
Stalking:	
Criminal Law:	<p>“Stalking is the intentional and repeated following or harassing of another person that would cause a reasonable person to feel alarmed or to suffer emotional distress. Stalking shall include but not be limited to the intentional and repeated uninvited presence of the perpetrator at another person’s home, workplace, school, or any place which would cause a reasonable person to be alarmed, or to suffer emotional distress as a result of verbal, written, or behaviorally implied threats of death, bodily injury, sexual assault, kidnapping, or any other statutory criminal act to himself or any member of his family or any person with whom he is acquainted.” La. Stat. § 14:40.2(A).</p>
Use of Information:	
<p>Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.</p>	
Evidentiary Standards:	
Pleading a Claim:	<p>Requires certification that “[e]ach allegation or other factual assertion in the pleading has evidentiary support or, for a specifically identified allegation or factual assertion, is likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” La. Code Civ. P. Art. 863(B)(3).</p>

Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” La. Code Evid. Art. 901(A).
Expert Testimony:	Louisiana Code of Evidence Article 702 and <i>Daubert</i> standard. <i>See State v. Foret</i> , 628 So. 2d 1116, 1123 (La. 1993).

Maine



Ongoing Projects:

Federal Project(s) Operating in the State:

The Southern Maine Volunteer Beach Profile Monitoring Program, which is run by the University of Maine Cooperative Extension and the National Oceanic and Atmospheric Administration’s (“NOAA”) Sea Grant Program, recruits volunteers every month to monitor beach contours. *Southern Maine Volunteer Beach Profile Monitoring Program*, ME. SEA GRANT, <http://www.seagrants.umaine.edu/extension/beach-profile-monitoring/home> (last visited Feb. 7, 2019). This data helps identify “seasonal, annual, and... long-term trends in beach erosion and accretion” to inform beach management decisions at the local and state levels. *Id.*

The Lake Stewards of Maine (“LSM”) Volunteer Lake Monitoring Program is primarily funded by grants from the Maine Department of Environmental Protection (“DEP”) and the U.S. Environmental Protection Agency. *Current Donors & Sponsors*, LAKE STEWARDS OF ME., <https://www.lakestewardsofmaine.org/donors-sponsors/> (last visited Feb. 7, 2019). LSM protects “Maine lakes through widespread citizen participation in the gathering and dissemination of credible scientific information pertaining to lake health.” *Mission*, LAKE STEWARDS OF ME., <https://www.lakestewardsofmaine.org/about/mission/> (last visited Feb. 7, 2019).

State Project(s):

Maine DEP runs a volunteer water quality monitoring program: the Volunteer River Monitoring Program (“VRMP”). *See Volunteer River Monitoring Program (VRMP)*, ME. DEP’T OF ENVTL. PROTECTION, https://www1.maine.gov/dep/water/monitoring/rivers_and_streams/vrmp/index.html (last visited Feb. 7, 2019).

The Maine Department of Inland Fisheries and Wildlife manages multiple citizen science projects. *See Citizen Science Projects*, ME. DEP’T OF INLAND FISHERIES & WILDLIFE, <https://www.maine.gov/ifw/fish-wildlife/citizen-science-projects.html> (last visited Feb. 7, 2019). The Department is starting a new citizen science project called the Maine Bird Atlas that will run from 2018–2022. *See Maine Bird Atlas*, ME. DEP’T OF INLAND FISHERIES & WILDLIFE, <https://www.maine.gov/ifw/fish-wildlife/maine-bird-atlas/index.html> (last visited Feb. 7, 2019). The program seeks to answer how many breeding and wintering birds exist in Maine, and where they can be found. *Id.*

Collection of Information:

Scientific Collector’s Permits:

“An educational or scientific collection permit is required by any person who wishes to take, transport or possess wildlife and their parts or products for scientific research or educational purposes[.]” Code Me. R. tit. 09-137 Ch. 6, § 6.02; *see also Fish and Wildlife, Forms*, ME. DEP’T OF INLAND FISHERIES & WILDLIFE, <https://www.maine.gov/ifw/forms/> (last visited Feb. 7, 2019).

Trespassing Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. In order for entry upon property to constitute criminal trespass, the property must be “posted . . . in a manner reasonably likely to come to the attention of intruders or . . . fenced or otherwise enclosed in a manner designed to exclude intruders.” Me. Rev. Stat. Ann. tit. 17-A, § 402(1)(C).
Civil Liability for Trespass:	“[A] person, knowing that the person is not licensed or privileged to do so,” who trespasses “commits a civil violation for which a fine of not less than \$100 and not more than \$500 may be adjudged.” Me. Rev. Stat. Ann. tit. 12, § 10657(1)–(2).
Drone Laws:	
State Parks:	The Maine Department of Agriculture, Conservation and Forestry’s Bureau of Parks and Lands prohibits the use of drones in “Maine State Parks, Historic Sites, or DACF Boat Launches without direct oversight and guidance of an approved law enforcement agency or by the issue of a Special Activity Permit.” See <i>Policy/State Law, Rules for State Parks and Historic Sites</i> , ME. DEP’T OF AGRIC., CONSERVATION & FORESTRY, https://www.maine.gov/dacf/parks/park_p asses_fees_rules/park_rules.shtml (last visited Feb. 7, 2019); see also BUREAU OF PARKS AND LANDS, DRONES, UNMANNED AIRCRAFT SYSTEM (UAS) (n.d.), https://www.maine.gov/dacf/parks/docs/Drone-UAS-%20Policy.pdf .
Stalking Laws:	
Criminal Law:	<p>“A person is guilty of stalking if:</p> <p>A. The actor intentionally or knowingly engages in a course of conduct directed at or concerning a specific person that would cause a reasonable person:</p> <ol style="list-style-type: none"> (1) To suffer serious inconvenience or emotional distress; (2) To fear bodily injury or to fear bodily injury to a close relation; (3) To fear death or to fear the death of a close relation; (4) To fear damage or destruction to or tampering with property; or (5) To fear injury to or the death of an animal owned by or in the possession and control of that specific person.” <p style="text-align: right;">Me. Rev. Stat. Ann. tit. 17-A, § 210-A(1)(A).</p>
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that there “is good ground to support” the claim. Me. R. Civ. P. 11(a).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Me. R. Evid. 901(a).
Expert Testimony:	The standard governing the admission of expert witness testimony is grounded in Maine Rule of Evidence 402 and the two-part standard described in <i>Searles v. Fleetwood Homes of Pa., Inc.</i> , 878 A.2d 509 (Me. 2005): “A proponent of expert testimony must establish that (1) the testimony is relevant pursuant to [Me. R.

Evid. 401], and (2) it will assist the trier of fact in understanding the evidence or determining a fact in issue.” *Id.* at 516–16 (citing *State v. Williams*, 388 A.2d 500, 516 (Me.1978)).

“[T]he testimony must also meet a threshold level of reliability.” *Id.* at 516 (quoting *In re Sarah C.*, 864 A.2d 162, 165 (Me. 2004)).

Maryland



Ongoing Projects:

Federal Project(s) Operating in the State: The Smithsonian runs a volunteer program researching parasites and their effects on mud crabs in the Chesapeake Bay. *See Chesapeake Bay Parasite Project*, SMITHSONIAN ENVTL. RES. CTR., <https://serc.si.edu/citizen-science/projects/chesapeake-bay-parasite-project> (last visited Feb. 7, 2019).

The Smithsonian also runs an environmental archaeology project at the Sellman Plantation. *See Environmental Archaeology at SERC*, SMITHSONIAN ENVTL. RES. CTR., <https://serc.si.edu/citizen-science/projects/environmental-archaeology-serc> (last visited Feb. 7, 2019).

The U.S. Geological Survey sponsors an annual “cricket crawl” in Baltimore (as well as D.C. and Arlington, VA) in which volunteers document their observations of crickets and katydids. *See DC/Baltimore Cricket Crawl*, CITIZENSCIENCE.GOV, <https://www.citizen-science.gov/catalog/155/#> (last visited Feb. 7, 2019); *see also* WASHINGTON DC/ BALTIMORE CRICKET CRAWL, <https://www.discoverlife.org/cricket/DC/> (last visited Feb. 7, 2019).

State Project(s): The Maryland Department of Natural Resources (“DNR”) runs a volunteer water quality monitoring program: Stream Waders. *See Stream Waders*, MD. DEP’T OF NAT. RESOURCES, <http://dnr.maryland.gov/streams/Pages/streamWaders.aspx> (last visited Feb. 7, 2019).

The University of Maryland Center for Environmental Science hosts DolphinWatch, a research effort by Dr. Helen Bailey that uses citizen scientists to monitor dolphins in Chesapeake Bay. *DolphinWatch*, U. OF MD. CTR. FOR ENVTL. SCIENCE, <https://www.umces.edu/dolphinwatch> (last visited Feb. 7, 2019).

Collection of Information:

Scientific Collection Permit: “Any properly accredited person of known scientific attainment desiring to collect wildlife, nests, or eggs from the wild for scientific or educational purposes must first obtain a Scientific Collection permit from the Wildlife and Heritage Service of the Department of Natural Resources.” *Scientific Collection Permit/License*, MD. DEP’T OF NAT. RESOURCES, <https://dnr.maryland.gov/wildlife/Pages/Licenses/scicoll.aspx> (last visited Feb. 7, 2019); *see also* Md. Code Regs. 08.02.01.15.

Trespass:

Criminal Liability for Trespass Despite Lack of Notice: No. Notice is required for liability to attach. “(a) A person may not enter or trespass on property that is posted conspicuously against trespass by:
 (1) signs placed where they reasonably may be seen; or
 (2) paint marks that:

	<p>(i) conform with regulations that the Department of Natural Resources adopts under § 5-209 of the Natural Resources Article; and</p> <p>(ii) are made on trees or posts that are located:</p> <ol style="list-style-type: none"> 1. at each road entrance to the property; and 2. adjacent to public roadways, public waterways, and other land adjoining the property.” <p style="text-align: right;">Md. Code Ann., Crim. Law § 6-402.</p>
Trespass on Cultivated Land:	<p>“Unless a person has permission from the owner of cultivated land or an agent of the owner, a person may not enter on the cultivated land of another.” Md. Code Ann., Crim. Law § 6-406(b).¹⁹³</p> <p>“‘Cultivated land’ means land that has been cleared of its natural vegetation and is currently planted with a crop or orchard.” <i>Id.</i> § 6-406(a).</p> <p>“A person who violates this section is guilty of a misdemeanor and on conviction is subject to imprisonment not exceeding 90 days or a fine not exceeding \$500 or both.” <i>Id.</i> § 6-406(c).</p>
Drone Laws:	
Preemption:	<p>“Only the State may enact a law or take any other action to prohibit, restrict, or regulate the testing or operation of unmanned aircraft systems in the State.” Md. Code Ann., Econ. Dev § 14-301(b).</p>
Stalking Laws:	
Criminal Law:	<p>“Stalking” is prohibited. Md. Code Ann., Crim. Law § 3-802. It is defined as:</p> <p>(a) . . . In this section, ‘stalking’ means a malicious course of conduct that includes approaching or pursuing another where</p> <ol style="list-style-type: none"> (1) the person intends to place or knows or reasonably should have known the conduct would place another in reasonable fear: <ol style="list-style-type: none"> (i) <ol style="list-style-type: none"> 1. of serious bodily injury; 2. of an assault in any degree; 3. of rape or sexual offense as defined by §§ 3-303 through 3-308 of this article or attempted rape or sexual offense in any degree 4. of false imprisonment; or 5. of death; or (ii.) that a third person likely will suffer any of the acts listed in item (i) of this item; or (2) the person intends to cause or knows or reasonably should have known that the conduct would cause serious emotional distress to another. . .

¹⁹³ This section only prohibits wanton entry on cultivated land. Md. Code Ann., Crim. Law § 6-406(d)(1); *see also In re Antoine M.*, 394 Md. 491, 503-505 (2006) (“[W]anton conduct’ is conduct ‘characterized by extreme recklessness and utter disregard for the rights of others.’”).

Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground to support” the claim. Md. R. 1-311(b).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Md. R. Evid. 5-901(a).
Expert Testimony:	Maryland Rule of Evidence 5-702 and <i>Frye-Reed</i> standard, but Maryland courts have not rejected the <i>Daubert</i> standard (on a case-by-case basis). See Md. R. Evid. 5-702 committee note (“This Rule is not intended to overrule [<i>Reed</i>] and other cases adopting the principles enunciated in [<i>Frye</i>]. The required scientific foundation for the admission of novel scientific techniques or principles is left to development through case law. Compare [<i>Daubert</i>].”); <i>Sissoko v. State</i> , 182 A.3d 874, 892 (Md. Ct. Spec. App. 2018) (“Although Maryland has not [replaced <i>Frye</i> with <i>Daubert</i>], our jurisprudence nevertheless has drifted toward the <i>Daubert</i> standard.”) (quotation omitted); <i>Reed v. State</i> , 391 A.2d 364, 367–68 (1978).

Massachusetts	
	
Ongoing Projects:	
Federal Project(s) Operating in the State:	The Boston Harbor Islands National Recreation Area, which is managed by the National Park Service, holds Stewardship Saturdays throughout the year where volunteer park stewards work on citizen science projects, including waterbird monitoring, insect and invertebrate identification, invasive marine species identification, and phenology monitoring. <i>Citizen Scientists, Boston Harbor Islands National Recreational Area Massachusetts</i> , NAT'L PARK SERV., https://www.nps.gov/boha/getinvolved/supportyourpark/citizen-scientists.htm (last visited Feb. 7, 2019).
State Project(s):	The Massachusetts Division of Fisheries and Wildlife (“MassWildlife”) offers opportunities for bowhunters and game bird hunters to submit hunting logs of observed wildlife, and opportunities for the general public to submit observations of roadkill, wild turkeys, vernal pools, and bat colonies. <i>Citizen Science: Wildlife Observation, Division of Fisheries and Wildlife</i> , MASS.GOV, https://www.mass.gov/service-details/citizen-science-wildlife-observation (last visited Feb. 7, 2019)
Collection of Information:	
Ag-Gag Law:	“Whoever enters any premises in which animals are being housed . . . and, without authority, injures, damages, commits any trespass upon, removes or carries away any data, equipment, facility or property . . . shall, if such injury, damage, trespass, removal, carrying away, interference or release is malicious and wilful, be punished [by a maximum of ten years in prison or \$25,000 and two and one-half years jail] or if such injury, damage, trespass, removal, carrying away, interference or release is wilful but not malicious, be punished [by a maximum of five years imprisonment or \$5,000 and two and one-half years jail].” Mass. Gen. Laws ch. 266, § 104B.
Research Permit:	A special use permit is required to “[c]onduct research which may damage, disturb or remove any [Department of Conservation and Recreation] property or resource, real, natural, personal, cultural or historic.” 302 Mass. Code Regs. 12.04(28)(h); <i>see also Apply for a Research Permit</i> , MASS.GOV, https://www.mass.gov/how-to/apply-for-a-research-permit (last visited Feb. 7, 2019).
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. In order to be guilty of trespass “in or upon the dwelling house, buildings, boats or improved or enclosed land, wharf, or pier of another,” a person must “hav[e] been forbidden so to do . . . whether directly or by notice posted thereon” Mass. Gen. Laws ch. 266, § 120.
Trespass against Water Sources:	Trespass against “any public source of water or public water supply facilities or land” carries a heightened monetary fine of not less than \$250 and not more than \$1000. Mass. Gen. Laws ch. 266, § 123A(a).
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”

Drone Laws:	
State Parks:	A special use permit is required to “[o]perate or use any...noise producing devices, such as ... equipment driven by motor or engine...[or] [e]xcept in an emergency, bring, take off, land or cause to descend on [Department of Conservation and Recreation] property any ...so-called ultra-light aircraft, or any other apparatus.” 302 Mass. Code Regs. 12.04(28)(e) & (g).
Stalking Laws:	
Criminal Law:	“Whoever (1) willfully and maliciously engages in a knowing pattern of conduct or series of acts over a period of time directed at a specific person which seriously alarms or annoys that person and would cause a reasonable person to suffer substantial emotional distress, and (2) makes a threat with the intent to place the person in imminent fear of death or bodily injury, shall be guilty of the crime of stalking The conduct, acts or threats described in this subsection shall include, but not be limited to, conduct, acts or threats conducted by ... electronic communication device including, but not limited to, any device that transfers signs, signals, writing, images, sounds, data, or intelligence of any nature transmitted in whole or in part by a wire, radio, electromagnetic, photo-electronic or photo-optical system[.]” Mass. Gen. Laws ch. 265, § 43(a).
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	The Massachusetts Department of Environmental Protection’s internal guidelines require the agency to use volunteer-gathered water quality monitoring data, which must meet the following criteria: 1) monitoring is conducted under an approved Quality Assurance Project Plan (“QAPP”); 2) samples are analyzed by a certified laboratory; and 3) information is documented in a citable report. <i>Water Quality Monitoring For Volunteers</i> , MASS. DEP’T OF ENVTL PROTECTION, https://www.mass.gov/guides/water-quality-monitoring-for-volunteers (last visited Feb. 7, 2019).
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is a good ground to support” the claim. Mass. R. Civ. P. 11(a).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Mass. R. Evid. 901(a).
Expert Testimony:	Massachusetts Rule of Evidence 702 and the <i>Daubert-Lanigan</i> standard (<i>i.e.</i> , general acceptance within the relevant scientific community). <i>See Palandjian v. Foster</i> , 446 Mass. 100, 107 (2006) (“This court adopted the basic reasoning of <i>Daubert</i> in [<i>Lanigan</i>], although we suggested that general acceptance in the relevant scientific community likely would remain the most important factor in determining reliability.”); <i>Com. v. Lanigan</i> , 419 Mass. 15, 26 (1994) (“We accept the basic reasoning of the <i>Daubert</i> opinion because it is consistent with our test of demonstrated reliability.”).

Michigan



Ongoing Projects:

State Project(s):	<p>The Michigan Department of Environmental Quality’s (“DEQ”) Cooperative Lakes Monitoring Program and Michigan Clean Water Corps both offer volunteer water quality monitoring opportunities. <i>See Cooperative Lakes Monitoring Program</i>, MICH. DEP’T OF ENVTL. QUALITY, https://www.michigan.gov/deq/0,4561,7-135-3313_3681_3686_3731-195536--.00.html (last visited Feb. 7, 2019); MICH. CLEAN WATER CORPS, https://micorps.net/ (last visited Feb. 7, 2019). The Michigan Clean Water Corps was created by an executive order in 2003: “The primary responsibility of the Corps shall be to assist the DEQ in establishing a comprehensive statewide volunteer water quality monitoring network . . . and to encourage the participation of other water quality monitoring programs in the Corps.” <i>See</i> Exec. Order No. 2003-15(I)(B) (2003).</p> <p>The Department of Natural Resource’s “Eyes in the Field” application allows volunteers to report sightings of animals observed in the wild. <i>See Eyes in the Field</i>, MICH. DEP’T OF NAT. RES., https://secure1.state.mi.us/ORS/Home, (last visited Feb. 7, 2019).</p>
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Collection of Information:

Scientific Research Permits:	<p>In order to research fish and wildlife on state park lands, land use and research permits are required. <i>See</i> Mich. Admin. Code R 299.927(n); <i>Cultural/Scientific Research Permits</i>, MICH. DEP’T OF NAT. RESOURCES, https://www.michigan.gov/dnr/0,4570,7-350-79136_79262_80436_85611---.00.html (last visited Feb. 7, 2019); <i>Scientific Collector’s Permits (Wildlife)</i>, MICH. DEP’T OF NAT. RESOURCES, https://www.michigan.gov/dnr/0,4570,7-350-79134_82777-230545--.00.html (last visited Feb. 7, 2019); <i>Cultural & Scientific Collectors Permit (Fisheries)</i>, MICH. DEP’T OF NAT. RESOURCES, https://www.michigan.gov/dnr/0,4570,7-350-79134_82777-452717--.00.html (last visited Feb. 7, 2019).</p>
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Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice:	<p>No. A person is guilty of trespass only if they:</p> <p>“(a) Enter the lands or premises of another without lawful authority after having been forbidden to do so by the owner or occupant or the agent of the owner or occupant.</p> <p>(b) Remain without lawful authority on the land or premises of another after being notified to depart by the owner or occupant or the agent of the owner or occupant.</p> <p>(c) Enter or remain without lawful authority on fenced or posted farm property of another person without the consent of the owner or his or her lessee or agent.</p>
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	A request to leave the premises is not a necessary element for a violation of this subdivision. This subdivision does not apply to a person who is in the process of attempting, by the most direct route, to contact the owner or his or her lessee or agent to request consent.” Mich. Comp. Laws Ann. § 750.552(1).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
Harassment & Surveillance Law:	<p>“(1) A person shall not knowingly and intentionally operate an unmanned aircraft system to subject an individual to harassment. As used in this subsection, “harassment” means that term as defined in section 411h or 411i of the Michigan penal code, 1931 PA 328, MCL 750.411h and 750.411i.</p> <p>....</p> <p>(3) A person shall not knowingly and intentionally operate an unmanned aircraft system to violate section 539j of the Michigan penal code, 1931 PA 328, MCL 750.539j, or to otherwise capture photographs, video, or audio recordings of an individual in a manner that would invade the individual’s reasonable expectation of privacy.” Mich. Comp. Laws Ann. § 259.322.</p> <p>An individual who violates this section is guilty of a misdemeanor “punishable by imprisonment for not more than 90 days or a fine of not more than \$500.00, or both.” <i>Id.</i> § 259.323(1).</p>
Preemption:	<p>“(1) Except as expressly authorized by statute, a political subdivision shall not enact or enforce an ordinance or resolution that regulates the ownership or operation of unmanned aircraft or otherwise engage in the regulation of the ownership or operation of unmanned aircraft.</p> <p>(2) This act does not prohibit a political subdivision from promulgating rules, regulations, and ordinances for the use of unmanned aircraft systems by the political subdivision within the boundaries of the political subdivision.” Mich. Comp. Laws Ann. § 259.305.</p>
State Parks:	On lands under the jurisdiction of the Mackinac Island State Park Commission it is unlawful for a person to “[u]se or operate an unmanned aircraft without proper written permission.” Mich. Admin. Code R 318.146(o).
Critical Infrastructure Laws:	
Trespass:	<p>Entry upon a “key facility” that is “completely enclosed by a physical barrier of any kind... and is posted with signage” is prohibited. Mich. Comp. Laws Ann. § 750.552c(1).</p> <p>“Key facilities” include: chemical manufacturing facilities, refineries, electric utility facilities, water treatment facilities, liquid natural gas facilities, transportation facilities, pulp or paper manufacturing facilities, pharmaceutical manufacturing facilities, waste treatment or disposal facilities, or “substantially similar” facilities. <i>Id.</i> § 750.552c(1)(a)-(l).</p> <p>A violation of this section is “a felony punishable by imprisonment for not more than 4 years or a fine of not more than \$2,500.00, or both.” <i>Id.</i> § 750.552c(3).</p>

Stalking Laws:	
Criminal Law:	“(1) As used in this section...(d) ‘Stalking’ means a willful course of conduct involving repeated or continuing harassment of another individual that would cause a reasonable person to feel terrorized, frightened, intimidated, threatened, harassed, or molested and that actually causes the victim to feel terrorized, frightened, intimidated, threatened, harassed, or molested..... (2) An individual who engages in stalking is guilty of a crime as follows: (a) Except as provided in subdivision (b), a misdemeanor punishable by imprisonment for not more than 1 year or a fine of not more than \$1,000.00, or both....” Mich. Comp. Laws Ann. § 750.411h.
Civil Law:	A victim may maintain a civil action against an individual who engages in stalking whether or not that individual has been charged or convicted. Mich. Comp. Laws Ann. § 600.2954.
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	The Michigan Clean Water Corps may “assist the DEQ in gathering and exchanging reliable and meaningful water quality data for water resources management and protection programs.” <i>See</i> Exec. Order No. 2003-15.
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim “is well grounded in fact.” Mich. Ct. R. 1.109(E)(5)(b).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Mich. R. Evid. 901(a).
Expert Testimony:	Michigan Rule of Evidence 702 and <i>Daubert</i> standard. <i>See Chapin v. A & L Parts, Inc.</i> , 733 N.W.2d 35, 36-38 (Mich. 2007); <i>Gilbert v. DaimlerChrysler Corp.</i> , 685 N.W.2d 391, 408 (Mich. 2004).

Minnesota



Ongoing Projects:

<p>State Project(s):</p>	<p>The Minnesota Pollution Control Agency (“MPCA”) maintains a list of “dozens of programs that train and support citizen scientists.” <i>See Citizen Science</i>, MINN. POLLUTION CONTROL AGENCY, https://www.pca.state.mn.us/ecoexperience/citizen-science (last visited Feb. 7, 2019). As of February 2019, MPCA programs include:</p> <ul style="list-style-type: none"> • Citizen Lake Monitoring Program; • Citizen Stream Monitoring Program; and • Lake Ice Reporting Program <p>MPCA encourages citizens to sign up and help monitor water quality in Minnesota. <i>See Citizen Water Monitoring</i>, MINN. POLLUTION CONTROL AGENCY, https://www.pca.state.mn.us/water/citizen-water-monitoring (last visited Feb. 7, 2019). Interested citizen scientists can find their site here at: https://www.pca.state.mn.us/water/find-site-and-sign (last visited Feb. 7, 2019).</p> <p>The Minnesota Department of Natural Resources (“DNR”) manages multiple volunteer wildlife survey and monitoring projects. <i>See Volunteering - Citizen Science</i>, MINN. DEP’T OF NAT. RESOURCES, https://www.dnr.state.mn.us/volunteering/index.html#Central (last visited Feb. 7, 2019); <i>see also Projects</i>, MINN. DEP’T OF NAT. RESOURCES, https://www.dnr.state.mn.us/eco/nongame/projects/index.html (last visited Feb. 7, 2019). As of February 2019, DNR projects include:</p> <ul style="list-style-type: none"> • Zebra Mussel Monitoring Program; • Dragonfly Survey; and • Minnesota Loon Monitoring Program
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Collection of Information:

<p>Scientific Collection Permit:</p>	<p>Permits are required to conduct research in state parks and natural areas. <i>See</i> Minn. R. 6136.0550; <i>id.</i> 6212.1400; <i>Research in Minnesota State Parks</i>, MINN. DEP’T OF NAT. RESOURCES, https://www.dnr.state.mn.us/parks_trails/research.html (last visited Feb. 7, 2019); <i>Minnesota Scientific and Natural Areas Program Research and Education</i>, MINN. DEP’T OF NAT. RESOURCES, https://www.dnr.state.mn.us/snap/research.html (last visited Feb. 7, 2019).</p>
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Trespass Laws:

<p>Criminal Liability for Trespass Despite Lack of Notice:</p>	<p>No. In order for a person’s entry upon property to constitute criminal trespass, either (1) the person must “refuse[] to depart from the premises on demand of the lawful possessor,” Minn. Stat. § 609.605, subd. 1(b)(3), or (2) the property must be “locked or posted,” <i>id.</i> § 609.605, subd. 1(b)(4).</p>
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Trespass on Agricultural Land:	“A person is guilty of a gross misdemeanor ¹⁹⁴ if the person enters the posted premises of another on which cattle, bison, sheep, goats, swine, horses, poultry, farmed Cervidae, farmed Ratitae, aquaculture stock, or other species of domestic animals for commercial production are kept, without the consent of the owner or lawful occupant of the land.” Minn. Stat. § 609.605, subd. 5(a).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
State Parks:	DNR “discourages use of unmanned aircraft in state parks, state recreation areas, and state waysides because of the impracticality of their operation under existing rule.” <i>Minnesota State Park Rules</i> , MINN. DEP’T OF NAT. RESOURCES, https://www.dnr.state.mn.us/state_parks/rules.html (last visited Feb. 7, 2019).
Critical Infrastructure Laws:	
Trespass:	<p>“(a) Whoever enters or is found upon property containing a critical public service facility, utility, or pipeline, without claim of right or consent of one who has the right to give consent to be on the property, is guilty of a gross misdemeanor, if:</p> <ul style="list-style-type: none"> (1) the person refuses to depart from the property on the demand of one who has the right to give consent; (2) within the past six months, the person had been told by one who had the right to give consent to leave the property and not to return, unless a person with the right to give consent has given the person permission to return; or (3) the property is posted. <p>(b) Whoever enters an underground structure that (1) contains a utility line or pipeline and (2) is not open to the public for pedestrian use, without claim of right or consent of one who has the right to give consent to be in the underground structure, is guilty of a gross misdemeanor. The underground structure does not need to be posted for this paragraph to apply.” Minn. Stat. § 609.6055, subd.2.</p> <p>“‘Critical public service facility’ includes buildings and other physical structures, and fenced in or otherwise enclosed property ... oil refineries; and storage areas or facilities for hazardous materials, hazardous substances, or hazardous wastes.” <i>Id.</i> § 609.6055, subd. 1(b).</p> <p>“‘Pipeline’ includes an aboveground pipeline, a belowground pipeline housed in an underground structure, and any equipment, facility, or building located in this state that is used to transport natural or synthetic gas, crude petroleum or petroleum fuels or oil or their derivatives, or hazardous liquids, to or within a distribution, refining, manufacturing, or storage facility that is located inside or outside of this state. Pipeline does not include service lines.” <i>Id.</i> § 609.6055, subd. 1(c).</p>

¹⁹⁴ A person guilty of a gross misdemeanor faces punishment of “imprisonment for not more than one year or [] payment of a fine of not more than \$3,000, or both.” Minn. Stat. § 609.03(2).

	<p>“‘Utility’ includes . . . any local utility or enterprise formed for the purpose of providing electrical or gas heating and power, telephone, water, sewage, wastewater, or other related utility service[.]” <i>Id.</i> § 609.6055, subd. 1(d)(3).</p>
<p>Stalking Laws</p>	
<p>Criminal Laws:</p>	<p>A person is guilty of stalking if he “follows, monitors, or pursues another, whether in person or through any available technological or other means” or “returns to the property of another if the actor is without claim of right to the property or consent of one with authority to consent.” Minn. Stat. § 609.749, subd. 2(2)-(3).</p> <p>“As used in this section, ‘stalking’ means to engage in conduct which the actor knows or has reason to know would cause the victim under the circumstances to feel frightened, threatened, oppressed, persecuted, or intimidated; and causes this reaction on the part of the victim regardless of the relationship between the actor and victim.” <i>Id.</i> § 609.749, subd. 1.</p>
<p>Use of Information:</p>	
<p>Although our research is incomplete, these provisions address the use of information collected by citizens.</p>	
<p>Explicitly Allows:</p>	<p>MPCA should “maximize use of available . . . resources . . . including use of citizen monitoring and citizen monitoring data . . . that meets the requirements . . . of the Volunteer Surface Monitoring Guide” in implementing the state clean water act. Minn. Stat. § 114D.20, subd. 3(2).</p>
<p>Prohibitive by Effect:</p>	<p>MPCA may only consider citizen-collected data that “meets the requirements . . . of the Volunteer Surface Monitoring Guide,” Minn. Stat. § 114D.20, subd. 3(2), or that “adheres to agency quality assurance and quality control protocols.” Minn. Stat. § 115.06, subd. 4(2).</p>
<p>Evidentiary Standards:</p>	
<p>Pleading a Claim:</p>	<p>Requires certification that “the allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Minn. R. Civ. P. 11.02(c).</p>
<p>Authentication or Chain of Custody:</p>	<p>“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Minn. R. Evid. 901(a).</p>
<p>Expert Testimony:</p>	<p>Minnesota Rule of Evidence 702 and <i>Mack-Frye</i> standard. <i>See Goeb v. Tharaldson</i>, 615 N.W.2d 800, 812-14 (Minn. 2000) (reaffirming use of <i>Mack-Frye</i> standard and declining to adopt <i>Daubert</i> standard); <i>see also State v. Mack</i>, 292 N.W.2d 764, 768 (Minn. 1980).</p>

Mississippi



Collection of Information:

<p>Ag-Gag Law:</p>	<p>“A person shall not, without the effective consent of the owner, acquire or otherwise exercise control over an animal facility, an animal from an animal facility or other property from an animal facility with the intent to deprive the owner of the facility, animal or property and to disrupt or damage the enterprise conducted at the animal facility.” Miss. Code. Ann. § 69-29-305</p> <p>The Animal Research or Exhibiting Facilities Protection Act further prohibits entering or remaining concealed in an animal facility, without the effective consent of the owner, “with the intent to disrupt or damage the enterprise conducted at the animal facility . . .” <i>Id.</i> § 69-29-309.</p> <p>“Animal facility” includes “a vehicle, building, separately secured yard, pad, pond, enclosure, structure or premises where an animal is kept, shown, handled, housed, exhibited, bred or offered for sale and any building . . . in which any commercial or academic enterprise is using warm-blooded or cold-blooded animals for food or fiber production, agriculture, research, testing, experimentation or education.” <i>Id.</i> § 69-29-303(c).</p> <p>Violation of these sections is punishable by “a fine of not more than Ten Thousand Dollars (\$10,000.00) or by imprisonment for not more than three (3) years, or both.” <i>Id.</i> § 69-29-315(1).</p>
<p>Scientific Collecting Permit:</p>	<p>“Anyone collecting animals for scientific or conservation purposes in the State of Mississippi will need to apply for a Scientific Collection/Possession Permit[.]” <i>Scientific Collecting, Science</i>, MISS. DEP’T OF WILDLIFE, FISHERIES & PARKS, https://www.mdwfp.com/museum/seek-study/permits/scientific-collecting/ (last visited Feb. 7, 2019); <i>see also</i> Miss. Code Ann. § 49-1-41.</p>
<p>Trespass Laws:</p>	
<p>Criminal Liability for Trespass Despite Lack of Notice:</p>	<p>No. In order for entry upon property to constitute criminal trespass, that entry must have “been forbidden . . . either orally or . . . by such sign or signs posted. . . at a place . . . where such signs may reasonably be seen.” Miss. Code Ann. § 97-17-97(1).</p>
<p>Nuclear Facility Trespass:</p>	<p>It is a felony to “willfully enter or trespass within the premises of any [nuclear facility].” Miss. Code Ann. § 97-17-95.</p> <p>Violation of this section is punishable by “a fine not to exceed five thousand dollars (\$5,000.00) or by imprisonment in the state penitentiary not to exceed five (5) years, or both such fine and imprisonment.” <i>Id.</i></p>
<p>Stalking Laws:</p>	
<p>Criminal Law</p>	<p>“Any person who purposefully engages in a course of conduct directed at a specific person, or who makes a credible threat, and who knows or should know that the conduct would cause a reasonable person to fear for his or her own</p>

	safety, to fear for the safety of another person, or to fear damage or destruction of his or her property, is guilty of the crime of stalking.” Miss. Code Ann. § 97-3-107(1)(a).
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground to support” the claim. Miss. R. Civ. P. 11(a).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Miss. R. Evid. 901(a).
Expert Testimony:	Mississippi Rule of Evidence 702 and <i>Daubert</i> standard. <i>See Mississippi Transp. Comm’n v. McLemore</i> , 863 So. 2d 31, 35-40 (Miss. 2003).

Missouri



Ongoing Projects:

Federal Project(s)
in the State:

The Lakes of Missouri Volunteer Program (“LMVP”) is sponsored by the U.S. Environmental Protection Agency (“EPA”) through a Section 319 grant under the Clean Water Act and managed by the Missouri Department of Natural Resources (“MDNR”) and the University of Missouri. *Lakes of Missouri Volunteer Program*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/460/#> (last visited Feb. 7, 2019). LMVP provides training to citizens in order to educate them and utilize their work to monitor water quality in the state. *See id.*; *see also About the LMVP*, LAKES OF MISSOURI VOLUNTEER PROGRAM, <http://www.lmvp.org/about.htm> (last visited Feb. 7, 2019).

The Missouri Established Program to Stimulate Competitive Research (“EPSCoR”) received grant money from the National Science Foundation (“NSF”) to research two areas related to climate change: infrastructure and plant responsiveness. *See About Missouri EPSCoR*, MISSOURI EPSCoR, <https://missouriepscor.org/about> (last visited Feb. 7, 2019). Citizen scientists interested in researching these areas can apply for money from the state of Missouri. *See id.* Under this broader program, Missourians Doing Impact Research Together (“MO DIRT”) specifically engages citizens and volunteers to monitor soil health. *See MO DIRT: Missourians Doing Impact Research Together*, MISSOURI EPSCoR, <https://modirt.missouriepscor.org/> (last visited Feb. 7, 2019).

Missouri Stream Team (“MST”) is partially funded by EPA through a Section 319 grant and is a partnership between MDNR, the Missouri Department of Conservation, Conservation Federation of Missouri, and the citizens of Missouri. *See Volunteer Water Quality Monitoring Program*, MO. DEP’T OF NAT. RESOURCES, <https://dnr.mo.gov/env/wpp/VWQM.htm> (last visited Feb. 7, 2019); *see also MISSOURI STREAM TEAM*, <http://www.mostreamteam.org/> (last visited Feb. 7, 2019). Volunteer citizens are responsible for mapping their watershed and collecting data on water quality which they then share with the public. *See id.* The MST is part of a coalition of citizens monitoring stream water quality. *See Who We Are*, STREAM TEAMS UNITED, <http://mstwc.org/who-we-are/vision-mission-goals/> (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Law:

“A person commits the offense of prohibited acts against animal research and production facilities if he or she: . . .

(3) Obtains access to an animal facility by false pretenses for the purpose of performing acts not authorized by the facility;

	<p>(4) Enters or otherwise interferes with an animal facility with the intent to destroy, alter, duplicate or obtain unauthorized possession of records, data, material, equipment, or animals; ...or</p> <p>(6) Enters or remains on an animal facility with the intent to commit an act prohibited by this section.” Mo. Ann. Stat. § 578.405(3).</p> <p>“Animal facility” is defined as “any facility engaging in . . . agricultural production or involving the use of animals, including any organization with a primary purpose of representing livestock production or processing, [and] any organization with a primary purpose of promoting or marketing livestock or livestock products” <i>Id.</i> § 578.405(2)(2).</p> <p>“The offense of prohibited acts against animal research and production facilities is a class A misdemeanor¹⁹⁵ unless [the offense results in damages].” <i>Id.</i> § 578.405(4).</p>
Wildlife Collector’s Permit:	<p>“All persons who collect or attempt to collect, possess, mount or preserve wildlife (including body parts, blood, and tissue) for education, research or other scientific related purposes must possess a Wildlife Collector’s Permit or be in the presence of a Wildlife Collector’s Permit holder.” MO. DEP’T OF CONSERVATION, APPLICATION FOR WILDLIFE COLLECTORS PERMIT, https://huntfish.mdc.mo.gov/sites/default/files/downloads/WildlifeCollectorPermitApp_0.pdf; <i>see also</i> Mo. Code Regs. Ann. tit. 3, § 10-9.425.</p>
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No. While trespass in the second degree does not require notice and is “an offense of absolute liability,” Mo. Ann. Stat. § 569.150(1), it is considered an “infraction” (resulting in a fine) rather than a “crime,” <i>id.</i> § 569.150(2) and editor’s notes.</p>
Trespass in the First Degree:	<p>“A person commits the offense of trespass in the first degree if he or she knowingly enters unlawfully or knowingly remains unlawfully . . . upon real property [that is fenced, otherwise enclosed, or as to which notice against trespass has been given by actual communication or posting].” Mo. Ann. Stat. § 569.140(1)-(2).</p> <p>“The offense of trespass in the first degree is a class B misdemeanor If the building or real property is part of a nuclear power plant, the offense of trespass in the first degree is a class E felony.” <i>Id.</i> § 569.140(3).¹⁹⁶</p>
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”

¹⁹⁵ The maximum fine for a class A misdemeanor is \$2,000, Mo. Ann. Stat. § 558.002(1)(2), and the sentence limit is a term not to exceed 1 year, *id.* § 558.011(1)(6).

¹⁹⁶ The fine limit for a class B misdemeanor is \$1,000, Mo. Ann. Stat. § 558.002(1)(3), and the sentence limit is a “term not to exceed six months,” *id.* § 558.011(1)(7). The maximum fine for a class E felony is \$10,000, *id.* § 558.002(1)(1), and the sentence may not exceed 4 years, *id.* § 558.011(1)(5).

Stalking Laws:	
Criminal Law:	<p>“A person commits the offense of stalking in the second degree if he or she purposely, through his or her course of conduct, disturbs, or follows with the intent to disturb another person.” Mo. Ann. Stat. § 565.227(1).</p> <p>As used in sections 565.227, “disturb” means “to engage in a course of conduct directed at a specific person that serves no legitimate purpose and that would cause a reasonable person under the circumstances to be frightened, intimidated, or emotionally distressed.” <i>Id.</i> § 565.225(1).</p>
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “[t]he allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Mo. Sup. Ct. R. 55.03(c)(3).
Authentication or Chain of Custody:	<p>Authentication requirements are enacted through Mo. Ann. Stat. § 490.680:</p> <p style="padding-left: 40px;">A record of an act, condition or event, shall, insofar as relevant, be competent evidence if the custodian or other qualified witness testifies to its identity and the mode of its preparation, and if it was made in the regular course of business, at or near the time of the act, condition or event, and if, in the opinion of the court, the sources of information, method and time of preparation were such as to justify its admission.</p> <p>Generally, courts have held that “the authenticity of a document cannot be assumed, and what it purports to be must be established by proof. Thus, before a writing can be admitted into evidence and considered by the trial court, its proponent must show that it is, in fact, what it is purported to be.” <i>Robin Farms, Inc. v. Bartholome</i>, 989 S.W.2d 238, 252 (Mo. Ct. App. 1999) (internal citation omitted).</p>
Expert Testimony:	<p>The standard for the admission of expert testimony in civil cases is section 490.065, and the application of <i>Frye</i> or any other standard is incorrect. <i>See State Bd. of Registration for Healing Arts v. McDonagh</i>, 123 S.W.3d 146, 149 (Mo. 2003) (en banc).</p> <p>Opinions and testimony “based on scientific tests are admissible if the scientific principle involved is generally considered by the scientific community as reliable.” <i>State v. Hutching</i>, 927 S.W.2d 411, 418 (Mo. Ct. App. 1996) (quoting <i>State v. Williams</i>, 659 S.W.2d 309 (Mo. Ct. App. 1983)).</p>

Montana



Ongoing Projects:

Federal Project(s) Operating in the State: The Snow Survey and Water Forecasting Program is run through the U.S. Department of Agriculture’s (“USDA”) Natural Resources Conservation Service (“NRCS”), National Water and Climate Center. *See Volunteer Snow Surveyors*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/248/#> (last visited Feb. 7, 2019). In Montana, these agencies educate citizens on data collection; the data is used to help forecast future water supplies based on snow pack and melt rates. *See id.*; *see also Snow Telemetry (SNOTEL) and Snow Course Data and Products*, NAT. RESOURCES CONSERVATION SERV., <https://www.wcc.nrcs.usda.gov/snow/> (last visited Feb. 7, 2019).

The National Park Service manages the Glacier National Park Citizen Science Program in coordination with the Crown of the Continent Research Learning Center (“CCRLC”). *Citizen Science, Crown of the Continent Research Learning Center*, NAT’L PARK SERV., <https://www.nps.gov/rlc/crown/citizen-science.htm> (last updated Aug. 23, 2017). The Program “engages park visitors, students, and staff in collection of scientific information that would otherwise be unavailable to resource managers and researchers.” *See id.* The two current citizen science projects under this Program are the [Common Loon Citizen Science Project](#) and [High Country Citizen Science Project](#). *See id.*

State Project(s): The Montana Department of Environmental Quality’s (“DEQ”) Volunteer Monitoring Support Program supports volunteer water quality monitoring in several ways: (1) Financial support, such as the Volunteer Monitoring Lab Analysis Program; (2) Technical support, such as trainings and guidance documents; (3) Administering volunteer monitoring opportunities; and (4) Forming partnerships with other entities in the state that also support volunteer monitoring. *See Monitoring Water Quality*, MONT. DEP’T OF ENVTL. QUALITY, <http://deq.mt.gov/Water/SurfaceWater/Monitoring> (last visited Feb. 7, 2019). Under this grant program, DEQ helps fund the volunteer water quality monitoring group, Montana Watercourse. *See Water Monitoring*, MONTANA WATER CENTER, <http://www.montanawatercenter.org/water-monitoring> (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Law: “A person who does not have the effective consent of the owner and who intends to damage the enterprise conducted at an animal facility may not...

- (b) enter an animal facility that is at the time closed to the public with the intent to commit an act prohibited by this chapter;
- (c) remain concealed in an animal facility with the intent to commit an act prohibited by this chapter;
- (d) enter an animal facility and commit or attempt to commit an act prohibited by this chapter;

	<p>(e) enter an animal facility to take pictures by photograph, video camera, or other means with the intent to commit criminal defamation; or</p> <p>(f) enter or remain on the premises of an animal facility if the person:</p> <p style="padding-left: 40px;">(i) had notice that the entry was forbidden; or</p> <p style="padding-left: 40px;">(ii) received notice to depart but failed to do so.” Mont. Code Ann. § 81-30-103(2).</p> <p>“Animal facility” includes “a vehicle, building, structure, research facility, or premises where an animal is lawfully kept, handled, housed, exhibited, bred, or offered for sale.” <i>Id.</i> § 81-30-102(2).</p> <p>Penalty:</p> <p>“(1) A person convicted of violating 81-30-103(2)(f) shall be fined not less than \$50 or more than \$500 or be imprisoned in the county jail for a term not to exceed 3 months, or both.</p> <p>(2) A person convicted of an act that violates... (2)(a) through (2)(e) and that results in \$500 or less in damage or destruction shall be fined not more than \$500 or be imprisoned in the county jail for a term not to exceed 6 months, or both.</p> <p>(3) A person convicted of an act that violates... (2)(a) through (2)(e) and that results in more than \$500 in damage or destruction shall be fined not more than \$50,000 or be imprisoned in the state prison for a term not to exceed 10 years, or both.” <i>Id.</i> § 81-30-105.</p>
Scientific Collection Permit:	A permit is required to “take, kill, capture, and possess...any birds, fish, or animals protected by Montana law” for scientific purposes. Mont. Code Ann. § 87-2-806(1); <i>see also</i> Mont. Admin. R. 12.7.1301; <i>Scientific Fish & Wildlife Permit Applications</i> , MONT. FISH, WILDLIFE, & PARKS, http://fwp.mt.gov/doing-Business/licenses/scientificWildlife/ (last visited Feb. 7, 2019).
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. “[A] person commits the offense of criminal trespass to property if the person <i>knowingly</i> ...enters or remains unlawfully in or upon the premises of another.” Mont. Code Ann. § 45-6-203(1)(b) (emphasis added). <p>“Privilege to enter or remain upon land is extended by [a landowner’s] explicit permission. . . or by the failure of the landowner . . . to post notice denying entry¹⁹⁷ [.]” <i>Id.</i> § 45-6-201(1).</p>
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Laws:	
Interference with Aerial Wildfire Suppression Response Effort:	“(1) A person may not obstruct, impede, prevent, or otherwise interfere with a lawful aerial wildfire suppression response by a state or local government effort by any means, including by the use of an unmanned aerial vehicle system.

¹⁹⁷ To “post notice denying entry” a landowner must comply with size, location, language, and color requirements for signage demarcating their private property. *See* Mont. Code Ann. § 45-6-201(2)-(3).

	(2) A person who violates subsection (1) is liable for a civil penalty to the state or local government for an amount equivalent to the reasonable costs of obstructing, impeding, preventing, or interfering with an aerial wildfire suppression response effort. The penalty may not exceed the actual flight costs of the aerial wildfire suppression response effort that was obstructed, impeded, prevented, or interfered with.” Mont. Code Ann. § 76-13-214.
Preemption:	Local governments are prohibited from enacting “an ordinance governing the private use of an unmanned aerial vehicle in relation to a wildfire.” Mont. Code Ann. § 7-1-111(20).
State Parks:	“(1) Launching or operating an unmanned aircraft system, drone, or model aircraft from a state park is prohibited unless: (a) use is authorized by a commercial use or special use permit; or (b) use occurs within an area specifically designated for such use by the park manager.” Mont. Admin. R. 12.8.816.
Stalking Laws:	
Criminal Law:	“(1) A person commits the offense of stalking if the person purposely or knowingly causes another person substantial emotional distress or reasonable apprehension of bodily injury or death by repeatedly: (a) following the stalked person; or (b) harassing, threatening, or intimidating the stalked person, in person or by mail, electronic communication, as defined in 45-8-213, or any other action, device, or method. (2) This section does not apply to constitutionally protected activity.” Mont. Code Ann. § 45-5-220.
Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Prohibits:	Montana prohibits the use of information from an “unmanned aerial vehicle,” in any proceeding within the state, “unless the information was obtained: (a) Pursuant to the authority of a search warrant; or (b) In accordance with judicially recognized exceptions to the warrant requirement.” Mont. Code Ann. § 46-5-109(1).
Explicitly Allows:	Montana’s Supreme Court clarified that information collected by private citizens, even in the course of a trespass, falls into the category of “judicially recognized exceptions to the warrant requirement,” unless they are acting as “agents of the state.” <i>See State v. Christensen</i> , 797 P.2d 893, 896–97 (Mont. 1990).
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.” Mont. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Mont. R. Evid. 901(a).
Expert Testimony:	Montana Rule of Evidence 702 and <i>Daubert</i> standard, but only for novel science. <i>See State v. Damon</i> , 119 P.3d 1194, 1197-98 (Mont. 2005).

Nebraska



Ongoing Projects:

State Project(s):	The University of Nebraska-Lincoln is partnering with the Nebraska Department of Roads and the Nebraska Game and Parks Commission as part of the Nebraska Canid Project to enlist volunteers to install trail cameras in areas of suitable swift fox habitat. <i>Citizen Science</i> , U. OF NEBRASKA-LINCOLN INST. OF AGRIC. & NAT. RESOURCES, https://swiftfox.unl.edu/citizen-science (last visited Feb. 7, 2019). The project is also researching how engagement in citizen science efforts affects a person’s attitudes and knowledge of resource conservation. <i>See id.</i>
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Collection of Information:

Scientific and Education Permit:	Permits to take wildlife for research and educational purposes may only be issued by the Game and Parks Commission to qualified individuals. <i>See</i> Neb. Rev. Stat. § 37-418; 163 Neb. Admin. Code Ch. 4, 001.07; <i>Scientific and Education Permit</i> , NEB. GAME & PARKS COMMISSION, https://apps.outdoornebraska.gov/sep (last visited Feb. 7, 2019).
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Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice:	No. “A person commits second degree criminal trespass if knowing that he or she is not licensed or privileged to do so . . . enters or remains in any place as to which notice against trespass is given by . . . [a]ctual communication[,] . . . [p]osting[,] . . . or . . . [f]encing or other enclosure.” Neb. Rev. Stat. § 28-521(1).
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Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
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Drone Laws:

State Parks:	Drone use is not permitted in state parks without a special permit. <i>See</i> 163 Neb. Admin. Code Ch. 5, 001.02A; <i>see also</i> Jerry Kane, <i>Drone Operators Advised to Know and Abide by Wildlife, Park Rules</i> , NEBRASKALAND (Mar. 22, 2018), http://magazine.outdoornebraska.gov/2018/03/drone-operators-advised-to-know-and-abide-by-wildlife-park-rules/ (published by the Nebraska Game and Parks Commission).
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Critical Infrastructure Laws:

Trespass:	Trespass of public power infrastructure facilities carries a greater penalty and has no notice requirement: “A person commits first degree criminal trespass ¹⁹⁸ if . . . he or she enters or secretly remains in. . . a public power infrastructure facility knowing that he or she does not have [] consent.” Neb. Rev. Stat. § 28-520(1). “[P]ublic power infrastructure facility means a power plant, electrical station or substation, or any other facility which is used by a public power supplier . . . to
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¹⁹⁸ First degree criminal trespass is a Class I misdemeanor, Neb. Rev. Stat. § 28-520(2), which carries a maximum one-year sentence and/or \$1,000 fine, *see id.* § 28–106(1).

	support the generation, transmission, or distribution of electricity and which is surrounded by a fence or is otherwise enclosed.” <i>Id.</i> § 28-520(3).
Stalking Laws:	
Criminal Law:	“Any person who willfully harasses another person or a family or household member of such person with the intent to injure, terrify, threaten, or intimidate commits the offense of stalking.” Neb. Rev. Stat. § 28-311.03.
Civil Law:	“A person against whom a violation of section 28-111 [includes stalking] has been committed may bring a civil action for equitable relief, general and special damages, reasonable attorney's fees, and costs.” Neb. Rev. Stat. § 28-113(1).
Use of Information:	
Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground for the filing of the pleading.” Neb. Rev. Stat. § 25-824(1).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Neb. Rev. Stat. § 27-901(1).
Expert Testimony:	Nebraska Rule of Evidence 702 and <i>Daubert</i> standard. <i>See Carlson v. Okerstrom</i> , 675 N.W.2d 89, 103-06 (Neb. 2004); <i>Schafersman v. Agland Coop.</i> , 631 N.W.2d 862, 871-77 (Neb. 2001).

Nevada



Ongoing Projects:

Federal Project(s) Operating in the State: The National Park Service (“NPS”) administers a citizen science wildlife survey project, Death Valley Wildlife, in Death Valley National Park through iNaturalist.org. *Share Wildlife Data with iNaturalist.org, Volunteer, Death Valley*, NAT’L PARK SERV., <https://www.nps.gov/deva/getinvolved/volunteer.htm> (last visited Feb. 7, 2019); *see also Death Valley Wildlife*, iNATURALIST, <https://www.inaturalist.org/projects/death-valley-wildlife> (last visited Feb. 7, 2019).

NPS also administers the annual Great Basin BioBlitz in Great Basin National Park, a 24-48 hour citizen science survey and education event. *Great Basin BioBlitz, Great Basin*, NAT’L PARK SERV., <https://www.nps.gov/grba/learn/nature/great-basin-bioblitz.htm> (last visited Feb. 7, 2019). Past projects have used citizen scientists to document species populations and habitats of birds, insects, and Lepidoptera (*i.e.*, butterflies and moths). *See id.*

State Project(s): The Nevada Department of Wildlife, Conservation Education Bureau administers a volunteer program where individuals can apply to work with staff and scientists “in projects such as fish stocking, fish sampling, nesting surveys, check station assistance, angler education, hunter education, interpretation, data entry, and office assistance.” *Wildlife Volunteer – FAQs, Become a Wildlife Volunteer*, NEV. DEP’T OF WILDLIFE, <http://www.ndow.org/Education/Volunteer/Wildlife/> (last visited Feb. 7, 2019).

Collection of Information:

Scientific Collection Permit: A permit is required to “take, kill, possess/import/export or band any species of wildlife, or collect the nests or eggs thereof, for strictly scientific or educational purposes[.]” NEV. DEP’T OF WILDLIFE, INSTRUCTIONS SCIENTIFIC COLLECTION/POSSESSION/EDUCATION PERMIT (2010), http://www.ndow.org/uploadedFiles/ndoworg/Content/Forms_and_Resources/Scientific-Collection-Possession-Import-Export-Banding-Permit-Instructions.pdf; *see also* Nev. Rev. Stat. § 503.650; Nev. Admin. Code 503.094; *Scientific Collection/Possession/Education Permit, Special Permit Information*, NEV. DEP’T OF WILDLIFE, http://www.ndow.org/Forms_and_Resources/SpecialPermits/ (last visited Feb. 7, 2019).

Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice: No. In order for a person’s entry upon land to constitute trespass, that person must “hav[e] been warned by the owner . . . not to trespass.” Nev. Rev. Stat. § 207.200(1)(b). Signs, fluorescent orange paint, and fencing can amount to a warning not to trespass. *See id.* § 207.200(2).

Drone Law: *See infra* “Drone Laws.”

Drone Laws:	
Operation in a Reckless Manner:	<p>“Any person operating an aircraft in the air, or on the ground or water...[i]n a careless or reckless manner so as to endanger the life or property of another...is guilty of a gross misdemeanor.”¹⁹⁹ Nev. Rev. Stat. § 493.130(1).</p> <p>“‘Aircraft’ includes an unmanned aerial vehicle.” <i>Id.</i> § 493.130(2)(a).</p>
Civil Cause of Action for Trespass:	<p>An individual may bring an action for trespass against someone who flies a drone over his or her private property at a height of less than 250 feet if “[t]he owner or operator of the [drone] has flown [it] over the property at a height of less than 250 feet on at least one previous occasion;” and “[t]he person who owns or occupies the real property notified the owner or operator of the [drone] that the person did not authorize the flight of the [drone] over the property[.]” Nev. Rev. Stat. § 493.103(1).</p> <p>If the plaintiff brings a successful trespass action under this section, he or she is entitled to treble damages for “any injury to the person or . . . property as a result of the trespass.” <i>Id.</i> § 493.103(3).</p> <p><u>Exceptions:</u> A person may not bring an action under this section if: (a) The unmanned aerial vehicle is lawfully in the flight path for landing at an airport, airfield or runway; (b) The unmanned aerial vehicle is in the process of taking off or landing; (c) The unmanned aerial vehicle was under the lawful operation of a law enforcement or public agency; and (d) the unmanned aerial vehicle was under the lawful operation of a business registered in the State. <i>Id.</i> § 493.103(2).</p>
State Parks:	<p>“Use of drones is prohibited in Nevada State Parks unless in an area designated for that use by a park supervisor, and a commercial use permit is in effect.” <i>Can I fly a drone?, FAQs</i>, NEV. STATE PARKS, http://parks.nv.gov/about/frequently-asked-questions (last visited Feb. 7, 2019).</p>
Other Provisions:	<p><i>See infra</i> “Critical Infrastructure Laws.”</p>
Critical Infrastructure Laws:	
Drone Law:	<p>“A person shall not operate an unmanned aerial vehicle within: (a) A horizontal distance of 500 feet or a vertical distance of 250 feet from a critical facility without the written consent of the owner of the critical facility.” Nev. Rev. Stat. § 493.109(1).</p> <p>“‘Critical facility’ means a petroleum refinery, a petroleum or chemical production, transportation, storage or processing facility, a chemical manufacturing facility, a pipeline and any appurtenance thereto, a wastewater treatment facility, a water treatment facility, a mine . . . , a power generating station, plant or substation and any appurtenances thereto, any transmission line that is owned in whole or in part by an electric utility The term does not</p>

¹⁹⁹ “Every person convicted of a gross misdemeanor shall be punished by imprisonment in the county jail for not more than 364 days, or by a fine of not more than \$2,000, or by both fine and imprisonment.” Nev. Rev. Stat. § 193.140.

	include any facility or infrastructure of a utility that is located underground.” <i>Id.</i> § 493.020(2). Violators will be guilty of a misdemeanor. ²⁰⁰ <i>Id.</i> § 493.109(3).
Stalking Laws:	
Criminal Law:	“A person who, without lawful authority, willfully or maliciously engages in a course of conduct that would cause a reasonable person to feel terrorized, frightened, intimidated, harassed, or fearful for the immediate safety of a family or household member, and that actually causes the victim to feel terrorized, frightened, intimidated, harassed, or fearful for the immediate safety of a family or household member, commits the crime of stalking.” Nev. Rev. Stat. § 200.575(1).
Use of Information:	
Although our research is incomplete, this provision could be construed to prohibit the use of information collected by citizens.	
Explicitly Prohibits:	“Any photograph, image, recording or other information that is acquired by a law enforcement agency through the operation of an unmanned aerial vehicle. . . or that is acquired from any other person or governmental entity . . . that obtained the photograph, image, recording or other information in a manner inconsistent with the requirements of this section, and any evidence that is derived therefrom: (a) Is not admissible in and must not be disclosed in a judicial, administrative or other adjudicatory proceeding; and (b) May not be used to establish reasonable suspicion or probable cause as the basis for investigating or prosecuting a crime or offense.” Nev. Rev. Stat. § 493.112(4).
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Nev. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence or other showing sufficient to support a finding that the matter in question is what its proponent claims.” Nev. Rev. Stat. § 52.015(1).
Expert Testimony:	Standard set by Nevada Revised Statute Section 50.275: “If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by special knowledge, skill, experience, training or education may testify to matters within the scope of such knowledge.” Courts also look to <i>Daubert</i> standard, however. <i>Hallmark v. Eldridge</i> , 189 P.3d 646, 650 (Nev. 2008) (holding that <i>Daubert</i> is persuasive authority).

²⁰⁰ A misdemeanor carries a maximum six-month sentence and/or \$1,000 fine or a fixed period of community service. Nev. Rev. Stat. § 193.150.

New Hampshire



Ongoing Projects:

State Project(s):	<p>The New Hampshire Department of Environmental Services (“NHDES”) administers multiple citizen science programs. For example:</p> <ul style="list-style-type: none"> • The Volunteer Lake Assessment Program (“VLAP”), initiated in 1985, is a “volunteer-driven lake sampling program to assist NHDES in evaluating lake water quality, and provides volunteer monitors and lake residents with reports on lake health.” <i>Volunteer Lake Assessment Program</i>, N.H. DEP’T OF ENVTL. SERV., https://www.des.nh.gov/organization/divisions/water/wmb/vlap/index.htm (last visited Feb. 7, 2019). • The Volunteer River Assessment Program (“VRAP”), established in 1998, helps “volunteers conduct water quality monitoring on an ongoing basis [to] increase the amount of river water quality information available to local, state and federal governments.” <i>Volunteer River Assessment Program</i>, N.H. DEP’T OF ENVTL. SERV., https://www.des.nh.gov/organization/divisions/water/wmb/vrap/index.htm (last visited Feb. 7, 2019).
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Collection of Information:

Scientific Collecting Permits:	A special use permit is necessary to conduct scientific wildlife studies on lands under the control of the New Hampshire Fish and Game Department. <i>See</i> N.H. Code Admin. R. Fis 902.03(b)(2)(e).
Drone Law:	<i>See infra</i> “Drone Laws.”

Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice:	No. For entry upon property to constitute criminal trespass, the intruder must “know[] that he is not licensed or privileged to do so[.]” N.H. Rev. Stat. Ann. § 635:2(I).
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Drone Laws:

Surveillance Law:	<p>“No person shall use a drone or UAV with the intent to conduct video surveillance of private citizens who are lawfully hunting, fishing, or trapping without obtaining the written consent of the persons being surveilled prior to conducting the surveillance.” N.H. Rev. Stat. Ann. § 207:57(I).</p> <p>“Any person violating the provisions of this section shall be guilty of a violation.”²⁰¹ <i>Id.</i> § 207:57(IV).</p>
Harassment of Wildlife:	No person may use a drone to “[d]rive or harass any wildlife.” N.H. Code Admin. R. Fis 312.02(b)(3).

²⁰¹ A violation only carries the penalty of a “fine or fine and forfeiture or other civil penalty.” N.H. Rev. Stat. Ann. § 625:9(V). The maximum fine for a violation is \$1,000. *See id.* § 651:2(IV)(a).

Stalking Laws:	
Criminal Law:	“A person commits the offense of stalking if such person... [p]urposely, knowingly, or recklessly engages in a course of conduct targeted at a specific person which would cause a reasonable person to fear for his or her personal safety or the safety of a member of that person’s immediate family, and the person is actually placed in such fear. . . .” N.H. Rev. Stat. Ann. § 633:3-a(I)(a).
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	<p>“There is established within the department of environmental services the New Hampshire volunteer river assessment program to provide: I. Water quality and related environmental data to the state and federal governments to define water quality trends; II. Data for river protection, management, and restoration programs; III. Information to classify New Hampshire waters; and IV. Data for surface water assessment reports.” N.H. Rev. Stat. Ann. § 487:38.</p> <p>VLAP was similarly established through statute and explicitly allows NHDES to use volunteer data. <i>See id.</i> § 487:31.</p>
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is a good ground to support” the claim. N.H. Super. Ct. Civ. R. 7(e).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” N.H. R. Evid. 901(a); <i>see also State v. Moscillo</i> , 649 A.2d 57, 59 (N.H. 1994).
Expert Testimony:	New Hampshire Rule of Evidence 702 and <i>Daubert</i> standard (partially codified in N.H. Rev. Stat. Ann. § 516:29-a). <i>See Baxter v. Temple</i> , 949 A.2d 167, 172-74 (N.H. 2008); <i>Baker Valley Lumber, Inc. v. Ingersoll-Rand Co.</i> , 813 A.2d 409, 415 (N.H. 2002).

New Jersey



Ongoing Projects:

Federal Project(s) Operating in the State: In 2009, the U.S. Environmental Protection Agency (“EPA”) awarded the Ironbound Community Corporation (“ICC”), a non-profit in Newark, a \$100,000 CARE Level I grant to conduct monitoring of pollution coming from 34 waste facilities in the area. *See ICC Env'tl. Monitoring*, FED. CROWDSOURCING AND CITIZEN SCI. CATALOG, <https://www.citizenscience.gov/catalog/76/#> (last visited Feb. 7, 2019). In 2015, EPA lent ICC four air quality sensors to assist their monitoring efforts. *See id.* EPA considers this a “proof of concept program,” which it will use to help determine whether it is effective to lend equipment to citizen science groups in other communities. *See id.* ICC volunteers are responsible for data entry, sample collection and measurements. *See id.*

State Project(s): The New Jersey Forest Service Woodland Stewards program engages volunteers in forest management programs including: forest inventory and data collection, invasive species identification, forest health monitoring, and bluebird nest box monitoring. *See Volunteer*, N.J. FOREST SERV., <https://www.state.nj.us/dep/parksandforests/forest/volunteers.htm> (last visited Feb. 7, 2019).

The New Jersey Department of Environmental Protection’s (“NJDEP”) Division of Water Monitoring and Standards facilitates volunteer water monitoring in association with 16 community trusts and associations. *Community Water Monitoring*, N.J. DEP’T OF ENVTL. PROTECTION, https://www.state.nj.us/dep/wms/bears/comm_water_monitoring.htm (last visited Feb. 7, 2019).

Collection of Information:

Scientific Collection Permit: A permit is required to “to collect mammals, reptiles, amphibians, fish, and birds and their nests or eggs, for strictly scientific purposes only.” N.J. Stat. Ann. § 23:4-52; *see also Scientific/Salvage Collecting Permits*, N.J. DIVISION OF FISH & WILDLIFE, <https://www.njfishandwildlife.com/scicolperm.htm> (last visited Feb. 7, 2019).

Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice: No. Notice against trespass must be given by “[a]ctual communication,” “[p]osting,” or “[f]encing.” N.J. Stat. Ann. § 2C:18-3(b).

Other Provisions: *See infra* “Critical Infrastructure Laws.”

Drone Laws:	
Law:	<p>“a. A person commits a disorderly persons offense²⁰² if he knowingly or intentionally operates . . . an unmanned aircraft system . . . in a manner that endangers the life or property of another. In making this determination, the court shall consider the standards for safe operation of small unmanned aircraft systems prescribed by federal law or regulation. . . .</p> <p>c. A person commits a crime of the fourth degree²⁰³ if he knowingly or intentionally operates an unmanned aircraft system in a manner that interferes with a first responder who is actively engaged in response or actively engaged in air, water, vehicular, ground, or specialized transport.” N.J. Stat. Ann. § 2C:40-28.</p>
Preemption:	“The provisions of P.L.2017, c. 315 (C.2C:40-27 et al.) shall preempt any law, ordinance, resolution, or regulation adopted by the governing body of a county or municipality concerning the private use of an unmanned aircraft system that is inconsistent with the provisions of this act.” N.J. Stat. Ann. § 2C:40-29.
State Parks:	“The operation of a [drone] is hereby specifically prohibited within all lands and waters administered by the State Park Service unless specifically approved by the Assistant Director, State Park Service in accordance with N.J.A.C. 7:2-1.4(b).” N.J. DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF PARKS AND FORESTRY, POLICY 2.38, UNMANNED AERIAL VEHICLES (July 8, 2015), https://www.state.nj.us/dep/parksandforests/parks/docs/policy_2.38_unmanned_aerial_vehicles-drones.pdf .
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Trespass:	A person who knowingly trespasses against “a research facility, power generation facility, waste treatment facility, public sewage facility, water treatment facility, public water facility, nuclear electric generating plant or any facility which stores, generates or handles any hazardous chemical or chemical compounds” commits a crime of the fourth degree. N.J. Stat. Ann. § 2C:18-3(a).
Drone Law:	<p>“An owner or operator of a critical infrastructure, including a political subdivision,” can apply to the Federal Aviation Administration “to prohibit or restrict the operation of unmanned aircraft systems in close proximity to the critical infrastructure.” N.J. Stat. Ann. § 2C:40-27(c).</p> <p>Accordingly, it is incumbent on citizen scientists to research which critical infrastructures are protected from drone observation in their area.</p>
Stalking Laws:	
Criminal Law:	“A person is guilty of stalking . . . if he purposefully or knowingly engages in a course of conduct directed at a specific person that would cause a reasonable

²⁰² The maximum allowable sentence for a disorderly persons offense is 6 months, N.J. Stat. § 2C:43-8, and the fine imposed for such an offense may not exceed \$1,000, *id.* § 2C:43-3(c).

²⁰³ A crime of the fourth degree carries a maximum 18-month sentence, N.J. Stat. § 2C:43-6(a)(4), and a fine not to exceed \$10,000, *id.* § 2C:43-3(b)(2).

	person to fear for his safety or the safety of a third person or suffer other emotional distress.” N.J. Stat. Ann. § 2C:12-10(b).
Use of Information:	
Although our research is incomplete, these provisions could be construed to allow the use of information collected by citizens.	
Explicitly Requires:	NJDEP must “[i]nvestigate and provide responses to all citizen complaints [regarding wetlands protection] submitted under Department procedures [and] not oppose intervention by any citizen when permissive intervention may be authorized by statute, rule, or regulation[.]” N.J. Admin. Code § 7:7A-22.19(a).
Explicitly Allows:	NJDEP may “[u]tilize the information derived from data cards distributed to [Adopt a Beach] program volunteers to formulate recommendations to the Governor and the Legislature for administrative or legislative action to effectuate the goal of preventing ocean pollution.” N.J. Stat. Ann. § 13:19-26(b)(2).
	“The [Stormwater Management Implementation Strategy] shall include a long-term monitoring program that will provide information about land use, water quality, water quantity, groundwater resources and riparian and aquatic habitat condition, as appropriate. Information for the monitoring program may include data obtained through watershed management, local, county, State, interstate, and/or Federal monitoring programs, including volunteer monitoring programs.” N.J. Admin. Code § 7:8–3.8(c).
Evidentiary Standards:	
Pleading a Claim:	Requires a statement of “the facts on which the claim is based.” N.J. Super. Ct. R. 4:5-2.
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter is what its proponent claims.” N.J. R. Evid. 901.
Expert Testimony:	For civil matters, New Jersey courts incorporate the <i>Daubert</i> factors in determining the admissibility of expert testimony under New Jersey Rule of Evidence 702, but do not embrace the full body of <i>Daubert</i> case law as applied by state and federal courts. <i>See In re Accutane Litig.</i> , 234 N.J. 340, 398-400 (2018). For criminal matters, New Jersey courts retain the more stringent “general acceptance” rule. <i>See id.</i> at 399 (citing <i>State v. Harvey</i> , 151 N.J. 117, 167-70 (1997)).

New Mexico



Ongoing Projects:

<p>Federal Project(s) Operating in the State:</p>	<p>In April 2018, the Bureau of Land Management (“BLM”) held its first annual Bio Blitz citizen science event at the Dripping Springs Natural Area, part of the Organ Mountains-Desert Peaks National Monument. <i>See BLM Outdoor Events for April</i>, U.S. DEP’T OF THE INTERIOR, https://www.blm.gov/press-release/blm-outdoor-events-april (last visited Feb. 7, 2019). “With the help of 114 citizen scientists, the BLM recorded over 130 species of plants, lizards, moths, butterflies, bats, birds and small mammals.” Daniella Barraza, <i>BioBlitz Joins BLM, Citizen Scientists in New Mexico Desert</i>, THE WILDLIFE SOC’Y (June 18, 2018), http://wildlife.org/bioblitz-joins-blm-citizen-scientists-in-new-mexico-desert/.</p> <p>The Bosque Ecosystem Monitoring Program engages elementary and high school students in collecting data on the state of the Bosque Ecosystem, along the Rio Grande River. <i>See History of BEMP</i>, BOSQUE ENVTL.MONITORING PROGRAM, http://bemp.org/history/ (last visited Feb. 7, 2019). The Program currently has 31 sites spread over 270 miles which collect over 1 million data points per year. <i>See id.</i> The program receives funding from both federal and state environmental agencies like EPA and the New Mexico State Parks Division. <i>See Funding Support</i>, ENVTL.MONITORING PROGRAM, http://bemp.org/funding/ (last visited Feb. 7, 2019).</p>
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Collection of Information:

<p>Research Permit:</p>	<p>“Academic research activities, including plant and animal collecting, are allowed in a park if the person or entity has obtained a research permit through the division’s resource program.” N.M. Admin. Code 19.5.2.42(A); <i>see also</i> N.M. Stat. Ann. § 17-3-29; N.M. Admin. Code 19.35.6; <i>Scientific and Educational Use of Wildlife, Special Use Permits and Information</i>, N.M. DEP’T OF GAME & FISH, http://www.wildlife.state.nm.us/enforcement/special-use-permits/ (last visited Feb. 7, 2019).</p>
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Trespass Laws:

<p>Criminal Liability for Trespass Despite Lack of Notice:</p>	<p>No. “A. Criminal trespass consists of <i>knowingly</i> entering or remaining upon posted private property without possessing written permission from the owner or person in control of the land. The provisions of this subsection do not apply if:</p> <ol style="list-style-type: none"> (1) the owner or person in control of the land has entered into an agreement with the department of game and fish granting access to the land to the general public for the purpose of taking any game animals, birds or fish by hunting or fishing; or (2) a person is in possession of a landowner license given to him by the owner or person in control of the land that grants access to that particular private land for the purpose of taking any game animals, birds or fish by hunting or fishing.
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	B. Criminal trespass also consists of <i>knowingly</i> entering or remaining upon the unposted lands of another knowing that such consent to enter or remain is denied or withdrawn by the owner or occupant thereof. Notice of no consent to enter shall be deemed sufficient notice to the public and evidence to the courts, by the posting of the property at all vehicular access entry ways.” N.M. Stat. Ann. § 30-14-1 (emphasis added); <i>see also id.</i> § 30-14-1.1.
Drone Laws:	
Federal Regulation of National Security Interest in State:	The Federal Aviation Administration (“FAA”) has prohibited the flying of drones within 400 feet of Los Alamos National Laboratory, pursuant to its authority to support national security and defense under 14 C.F.R. § 99.7. <i>See National Security UAS Flight Restrictions</i> , FED. AVIATION ADMIN., http://uas-faa.opendata.arcgis.com/datasets/0270b9d8a5d34217856cc03aaf833309_0?uiTab=table (last visited Feb. 7, 2019).
Harassment of Wildlife:	“It is unlawful, at any time, to pursue, harass, harr, drive or rally any protected species by any means [including the use of drones] except as allowed while legally hunting....” N.M. Admin. Code 19.31.10.11(D); <i>see also Be Aware of What’s Legal and What Isn’t, General Hunting Rules</i> , N.M. GAME & FISH, http://www.wildlife.state.nm.us/hunting/general-rules/ (last visited Feb. 7, 2019).
Stalking Laws:	
Criminal Laws:	“Stalking consists of knowingly pursuing a pattern of conduct, without lawful authority, directed at a specific individual when the person intends that the pattern of conduct would place the individual in reasonable apprehension of death, bodily harm, sexual assault, confinement or restraint of the individual or another individual.” N.M. Stat. Ann. § 30-3A-3(A).
Use of Information:	
Although our research is incomplete, these provisions could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	<p><u>Water Quality Enforcement Actions:</u></p> <p>“Whenever, <i>on the basis of any information</i>, a constituent agency determines that a person has violated or is violating a requirement, regulation or water quality standard . . . the constituent agency may” take enforcement action. N.M. Stat. Ann. § 74-6-10(A) (emphasis added).</p> <p><u>Air Pollution Enforcement Actions:</u></p> <p>“When, <i>on the basis of any information</i>, the secretary or the director determines that a person has violated or is violating a requirement or prohibition of the Air Quality Control Act, a regulation promulgated pursuant to that act or a condition of a permit issued under that act, the secretary or the director may” bring an enforcement action. N.M. Stat. Ann. § 74-2-12(A) (emphasis added).</p>
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground to support” the claim. N.M. R. Civ. P. 1-011(A).

Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” N.M. R. Evid. 11-901(A).
Expert Testimony:	New Mexico Rule of Evidence 702 and <i>Daubert</i> standard (scientific validity). <i>See State v. Alberico</i> , 861 P.2d 192, 202-04 (N.M. 1993). The <i>Alberico-Daubert</i> standard does not apply to non-scientific expert testimony. <i>See State v. Torres</i> , 976 P.2d 20, 34 (N.M. 1999) (“[A]pplication of the <i>Daubert</i> factors is unwarranted in cases where expert testimony is based solely upon experience or training.”) (quoting <i>Compton v. Subaru of Am., Inc.</i> , 82 F.3d 1513, 1518 (10th Cir. 1996)).

New York



Ongoing Projects:

Federal Project(s) Operating in the State: CrowdHydrology, which is sponsored by the U.S. Geological Survey (“USGS”), gathers “information on stream stage or water levels from anyone willing to send [] a text message of the water levels at their local stream to collect spatially distributed hydrologic data.” *CrowdHydrology*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/129/#> (last visited Feb. 7, 2019); *see also How it Works*, CROWDHYDROLOGY, <http://www.crowdhydrology.com/about/how-it-works/> (last visited Feb. 7, 2019). This project is ongoing in New York. *See Locations, New York*, CROWDHYDROLOGY, <http://www.crowdhydrology.com/location/new-york/> (last visited Feb. 7, 2019).

The NYC Cricket Crawl, which is sponsored by USGS, uses citizen scientists to “listen for the calls of crickets and katydids and document their observations.” *NYC Cricket Crawl*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/153/#> (last visited Feb. 7, 2019); *see also NYC CRICKET CRAWL*, <https://www.discoverlife.org/cricket/> (last visited Feb. 7, 2019).

State Project(s): The New York Department of Environmental Conservation (“NYDEC”) runs a voluntary water quality monitoring program that focuses on the state’s rivers and streams: Water Assessments by Volunteer Evaluators (“WAVE”). *See Water Assessments by Volunteer Evaluators*, N.Y. DEP’T OF ENVTL. CONSERVATION, <http://www.dec.ny.gov/chemical/92229.html> (last visited Feb. 7, 2019). Through WAVE, volunteers monitor macroinvertebrate populations, using them as indicator species for water quality. *See id.*; *see also generally* Charles Gottlieb, et al., *Bug Catching for the State*, 32 VA. ENVTL. L. J. 61 (2014).

NYDEC was also tasked with establishing “a program ... known as the ‘citizens statewide lake assessment program [“CSLAP”]’ The purpose of this program is to establish a network of volunteers . . . [who] will sample the assigned lakes on a weekly basis between May and September.” N.Y. Env’tl. Conserv. Law § 17-0305(1); *see also Citizens Statewide Lake Assessment Program (CSLAP)*, N.Y. DEP’T OF ENVTL. CONSERVATION, <https://www.dec.ny.gov/chemical/81576.html> (last visited Feb. 7, 2019).

The NYDEC also sponsors a number of citizen science programs which allow citizens to help the Bureau of Wildlife observe and collect valuable data. *See Citizen Science: Wildlife Observation Data Collection*, N.Y. DEP’T OF ENVTL. CONSERVATION, <https://www.dec.ny.gov/animals/1155.html> (last visited Feb. 7, 2019). These projects are aimed at preserving populations of a variety of animals, including deer, grouse and woodcock, geese, bobcats, and wild turkey. *See id.*; *see also* BERNADETTE LAMANNA, DISCOVER... CITIZEN SCIENCE (2011), http://www.dec.ny.gov/docs/administration_pdf/1211citizenscience.pdf.

Collection of Information:	
State Research Permits:	A person is required to acquire a license to “collect or possess fish, wildlife, shellfish, crustacea, or aquatic insects, birds’ nests or eggs for propagation, banding, scientific or exhibition purposes.” N.Y. Env’tl. Conserv. Law § 11-0515(1). Furthermore, “[n]o person shall sponsor, conduct or participate in any research project on State lands except under permit from the department. Examples of research include, but are not limited to, population studies, collection of scientific samples, placement of scientific instruments, seismic exploration and archaeological studies.” N.Y. Comp. Codes R. & Regs. tit. 6, § 190.8(ad).
Trespassing Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. “A person is guilty of trespass when he <i>knowingly</i> enters or remains unlawfully in or upon premises.” N.Y. Penal Law § 140.05 (emphasis added). Entry “upon unimproved and apparently unused land, which is neither fenced nor otherwise enclosed in a manner designed to exclude intruders” is licensed “unless notice against trespass is personally communicated . . . or . . . given by posting in a conspicuous manner.” <i>Id.</i> § 140.00(5).
Drone Laws:	
State Parks:	A permit is required to fly drones in state parks. <i>See</i> N.Y. Comp. Codes R. & Regs. tit. 9, § 372.7(j); <i>id.</i> § 409.1(j); <i>see also</i> NEW YORK STATE PARKS, RECREATION AND HISTORIC PRESERVATION, REGULATING UNMANNED AIRCRAFT SYSTEMS, OPR-PCD-018, at 2 (Jan. 6, 2015), https://parks.ny.gov/inside-our-agency/documents/GuidancePolicies/RegulatingUnmannedAircraftSystemsDronesModelAirplanesQuadCopters.pdf .
New York City Policy:	We were unable to find a specific city ordinance outlawing drone flying in New York City. However, the City’s official website currently indicates it is illegal to fly drones in New York City, and directs citizens witnessing drone flight to call 911. <i>See NYC Resources, Drones</i> , NEW YORK CITY, https://www1.nyc.gov/nyc-resources/service/5521/drones (last visited Feb. 7, 2019).
Stalking Laws:	
Criminal Law:	“A person is guilty of stalking in the fourth degree when he or she intentionally, and for no legitimate purpose, engages in a course of conduct directed at a specific person, and knows or reasonably should know that such conduct: <ol style="list-style-type: none"> 1. is likely to cause reasonable fear of material harm to the physical health, safety or property of such person, a member of such person’s immediate family or a third party with whom such person is acquainted; or 2. causes material harm to the mental or emotional health of such person, where such conduct consists of following, telephoning or initiating communication or contact with such person, a member of such person’s immediate family or a third party with whom such person is acquainted, and the actor was previously clearly informed to cease that conduct; or 3. is likely to cause such person to reasonably fear that his or her employment, business or career is threatened, where such conduct

	consists of appearing, telephoning or initiating communication or contact at such person’s place of employment or business, and the actor was previously clearly informed to cease that conduct.” N.Y. Penal Law § 120.45.
Use of Information:	
Although our research is incomplete, these provisions could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	<p>“In case any written complaint shall be filed with the commissioner and he shall have cause to believe . . . that any person is violating any code, rule or regulation [governing air pollution] . . . the commissioner shall cause a prompt investigation thereof to be made.” N.Y. Env’tl. Conserv. Law § 19-0503.</p> <p>Under CSLAP, NYDEC “shall prepare an annual report which will include a summary of the information collected on the monitored waters during the previous season. This information shall be distributed to the program participants and other interested parties.” N.Y. Env’tl. Conserv. Law § 17-0305(6).</p> <p>The NYDEC commissioner is directed by statute to “prepare a citizen participation handbook for the purpose of providing guidance to applicants in the design and implementation of meaningful citizen participation plans” related to Environmental Remediation Programs, such as Brownfield Site Redevelopment. N.Y. Env’tl. Conserv. Law § 27-1417; <i>see also</i> NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, CITIZEN PARTICIPATION HANDBOOK FOR REMEDIAL PROGRAMS (2010). The handbook provides extensive guidance for citizens interested in compiling Remedial Investigation Reports or Work Plans. <i>See, e.g.</i>, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, CITIZEN PARTICIPATION HANDBOOK FOR REMEDIAL PROGRAMS § 3.3 (2010).</p>
Evidentiary Standards:	
Pleading a Claim:	“Statements in a pleading shall be sufficiently particular to give the court and parties notice of the transactions, occurrences, or series of transactions or occurrences, intended to be proved and the material elements of each cause of action or defense.” N.Y. C.P.L.R. § 3013.
Authentication or Chain of Custody:	There is no equivalent general provision to FRE 901 in the New York laws, although there are specific rules for authenticating specific types of evidence. <i>See</i> N.Y. C.P.L.R. art. 45. Additionally, these methods of authentication are not exclusive and correspond with standards used in other states and the federal courts. <i>See People v. Patterson</i> , 93 N.Y.2d 80, 104 (N.Y. 1999). Photographs and other records can be authenticated by witnesses of the recorded events, operators or installers, or by expert testimony that the evidence truly and accurately represents what was before the camera. <i>See id.</i> ; <i>see also</i> N.Y. C.P.L.R. art. 45; <i>People v. Byrnes</i> , 33 N.Y.2d 343 (N.Y. 1974).
Expert Testimony:	<i>Frye</i> standard. <i>See People v. Wesley</i> , 633 N.E.2d 451, 453-54 (N.Y. 1994).

North Carolina



Ongoing Projects:

Federal Project(s)
Operating in the
State:

The Smithsonian supports North Carolina’s Candid Critters, a collaborative program of several state agencies. *See About the Project*, NORTH CAROLINA’S CANDID CRITTERS, <http://www.nccandidcritters.org/about-the-project/> (last visited Feb. 7, 2019). Volunteers participate in a camera trap program to monitor trends in mammal populations, including deer, coyotes, and other species of concern. *See id.* The program is a part of the eMammal initiative. *See id.*

The international King Tides project conducts a citizen-science project called “What’s My Water Level?” organized at the University of North Carolina. *See Join a Project*, KING TIDES PROJECT, <http://kingtides.net/participate/join-a-project/> (last visited Feb. 7, 2019). Anyone can submit data to the National Oceanic and Atmospheric Administration (“NOAA”) GIS mapping tool. *See All Contributions*, WHAT’S MY WATER LEVEL?, <http://noaa.maps.arcgis.com/apps/MapSeries/index.html?appid=8e4a278576964f47b4fc050e51f344ca> (last visited Feb. 7, 2019).

The National Science Foundation (“NSF”) supports Sentinels of the Sounds, a program of North Carolina State University. *See Sentinels of the Sounds*, <http://sentinelsnc.weebly.com/> (last visited Feb. 7, 2019). Participants provide photographs of cypress trees in and near sounds in North Carolina to help track changes to the shore and wetlands. *See id.*

The University of North Carolina, using a grant from NSF, conducts a project where citizen scientists help track seasonal changes of caterpillars, beetles, and spiders called Caterpillars Count. *See Overview*, CATERPILLARS COUNT! <https://caterpillarscount.unc.edu/index.html> (last visited Feb. 7, 2019).

State Project(s):

The North Carolina Natural History Museum hosts Natural North Carolina, an iNaturalist project where volunteers can report wildlife, plant, and fungi sightings throughout the state. *See Natural North Carolina*, INATURALIST, <https://www.inaturalist.org/projects/natural-north-carolina> (last visited Feb. 7, 2019).

In Raleigh, North Carolina, the Stormwater Division manages a Volunteer Stream Monitoring Program, which allows volunteers to monitor local stream health and share that data with local agencies and other volunteer groups. *See Volunteer Stream Monitoring Program*, RALEIGH, <https://www.raleighnc.gov/services/content/PWksStormwater/Articles/VolunteerStreamMonitoring.html> (last updated Feb. 6, 2019).

Collection of Information:	
Ag-Gag Law:	<p>“(a) Any person who intentionally gains access to the nonpublic areas of another’s premises and engages in an act that exceeds the person’s authority to enter those areas is liable to the owner or operator of the premises for any damages sustained. For the purposes of this section, “nonpublic areas” shall mean those areas not accessible to or not intended to be accessed by the general public.</p> <p>(b) For the purposes of this section, an act that exceeds a person’s authority to enter the nonpublic areas of another’s premises is any of the following:</p> <p>(1) An employee who enters the nonpublic areas of an employer’s premises for a reason other than a bona fide intent of seeking or holding employment or doing business with the employer and thereafter without authorization captures or removes the employer’s data, paper, records, or any other documents and uses the information to breach the person’s duty of loyalty to the employer.</p> <p>(2) ...and thereafter without authorization records images or sound occurring within an employer’s premises and uses the recording to breach the person’s duty of loyalty to the employer.</p> <p>(3) Knowingly or intentionally placing on the employer’s premises an unattended camera or electronic surveillance device and using that device to record images or data.” N.C. Gen. Stat. § 99A-2.²⁰⁴</p> <p>In a civil suit, a court may award the prevailing party, separately or in conjunction with equitable relief, compensatory damages, and costs and fees, “[e]xemplary damages as otherwise allowed by State or federal law in the amount of five thousand dollars (\$5,000) for each day, or portion thereof, that a defendant has acted in violation of subsection (a) of this section.” <i>Id.</i> § 99A-2(d).</p>
Research Permit:	<p>“A permit is required for any project involving the collection, removal or disturbance of any natural or cultural resource of any state park unit and for projects that require placing monitoring equipment in any state park unit.” <i>Hours, Fees and Permits</i>, N.C. DIVISION OF PARKS & RECREATION, https://www.ncparks.gov/hours-fees-and-permits (last visited Feb. 7, 2019); <i>see also</i> 7 N.C. Admin. Code 13B.0201(d); <i>id.</i> 13B.0104(d).</p>
Drone Law:	<i>See infra</i> “Drone Laws.”
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. Entry upon property constitutes criminal trespass in the first degree only if the property is “so enclosed or secured as to demonstrate clearly an intent to keep out intruders.” N.C. Gen. Stat. § 14-159.12(a).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”

²⁰⁴ The Fourth Circuit ruled in 2018 that two organizations had Article III standing to challenge this regulation under the First Amendment and remanded the case to the district court for further proceedings. *See PETA, Inc. v. Stein*, 737 Fed.Appx. 122 (4th Cir. 2018).

Drone Laws:	
Surveillance Law:	<p>“Except as otherwise provided in this section, no person . . . shall use an unmanned aircraft system to . . . [c]onduct surveillance of . . . [p]rivate real property without the consent of the owner, easement holder, or lessee of the property.” N.C. Gen. Stat. § 15A-300.1(b)(1).</p> <p><u>Civil Liability:</u> “Any person . . . whose photograph is taken in violation of the provisions of this section, shall have a civil cause of action . . . [and] may elect to recover five thousand dollars (\$ 5,000) for each photograph or video that is published or otherwise disseminated, as well as reasonable costs and attorneys’ fees and injunctive or other relief as determined by the court.” <i>Id.</i> § 15A-300.1(e).</p>
Launch and Recovery Law:	<p>“No unmanned aircraft system may be launched or recovered from any State or private property without consent.” N.C. Gen. Stat. § 15A-300.2(a).</p>
State Parks:	<p>“Park visitors are prohibited from ascending or taking-off within or upon any state park area or state park water surface, of any airplane, flying machine (includes drones, UAS, quadcopters)...or other apparatus for aviation. In some limited circumstances, these machines may be operated after obtaining a special activity permit from the Park.” <i>Park Rules</i>, N.C. DIVISION OF PARKS & RECREATION, https://www.ncparks.gov/park-rules (last visited Feb. 7, 2019); <i>see also</i> N.C. Gen. Stat. § 15A-300.2(a).</p>
Critical Infrastructure Laws:	
Trespass:	<p>Trespass against a “facility . . . owned or operated by an electric power supplier[,]” a water treatment facility, a natural gas facility (including a “natural gas pipeline carrier”), or “[a]ny facility used or operated for agricultural activities” carries a heightened penalty as a Class A1 misdemeanor.²⁰⁵ N.C. Gen. Stat. § 14-159.12(c).</p>
Stalking Laws:	
Criminal Law:	<p>“A defendant is guilty of stalking if the defendant willfully on more than one occasion harasses another person without legal purpose or willfully engages in a course of conduct directed at a specific person without legal purpose and the defendant knows or should know that the harassment or the course of conduct would cause a reasonable person to do any of the following:</p> <ol style="list-style-type: none"> (1) Fear for the person’s safety or the safety of the person’s immediate family or close personal associates. (2) Suffer substantial emotional distress by placing that person in fear of death, bodily injury, or continued harassment.” N.C. Gen. Stat. § 14-277.3A(c).

²⁰⁵ A Class A1 misdemeanor carries a maximum sentence of 150 days and a fine at the discretion of the court. N.C. Gen. Stat. § 15A-1340.23.

Use of Information:	
Although our research is incomplete, this provision could be construed to prohibit the use of information collected by citizens.	
Explicitly Prohibits:	“Evidence obtained or collected in violation of this section [which prohibits the surveillance of private real property by drone] is not admissible as evidence in a criminal prosecution in any court of law in this State except when obtained or collected under the objectively reasonable, good-faith belief that the actions were lawful.” N.C. Gen. Stat. § 15A-300.1(f).
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim “is well grounded in fact.” N.C. Gen. Stat. § 1A-1, Rule 11(a).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” N.C. Gen. Stat. § 8C-1, Rule 901(a).
Expert Testimony:	North Carolina Rule of Evidence 702 and <i>Daubert</i> standard. <i>See State v. McGrady</i> , 368 N.C. 880, 884-93 (2016).

North Dakota



Collection of Information:

<p>Ag-Gag Law:</p>	<p>“No person without the effective consent of the owner may. . .</p> <p>3. Enter an animal facility, not then open to the public, with intent to commit an act prohibited by this section.</p> <p>4. Enter an animal facility and remain concealed with intent to commit an act prohibited by this section.</p> <p>5. Enter an animal facility and commit or attempt to commit an act prohibited by this section.”</p> <p>6. Enter an animal facility and use or attempt to use a camera, video recorder, or any other video or audio recording equipment.” N.D. Cent. Code § 12.1-21.1-02.</p> <p>“A person who violates subsections 2 through 5 or 7 of section 12.1-21.1-02 is guilty of a class C felony²⁰⁶. A person who violates subsection 6 of section 12.1-21.1-02 is guilty of a class B misdemeanor²⁰⁷.” <i>Id.</i> § 12.1-21.1-04.</p> <p>Private parties can recover treble damages in a civil suit for violations of subsections (5) or (6) above. <i>Id.</i> § 12.1-21.1-05.</p>
<p>Drone Law:</p>	<p><i>See infra</i> “Drone Laws.”</p>
<h3>Trespass Laws:</h3>	
<p>Criminal Liability for Trespass Despite Lack of Notice:</p>	<p>No. Entry upon property only constitutes criminal trespass if the property is “so enclosed as to manifestly exclude intruders,” N.D. Cent. Code § 12.1-22-03(2)(b), if “notice against trespass is given by . . . posting in a manner reasonably likely to come to the attention of intruders,” <i>id.</i> § 12.1-22-03(3)(a), or if “the individual enters or remains in any place as to which notice against trespass is given by actual communication to the actor by the individual in charge of the premises or other authorized individual,” <i>id.</i></p>
<p>Other Provisions:</p>	<p><i>See supra</i> “Ag-Gag Law.”</p>
	<p><i>See infra</i> “Drone Laws.”</p>

²⁰⁶ A class C felony carries a maximum sentence of 5 years and/or a fine of \$10,000. N.D. Cent. Code § 12.1-32-01(4).

²⁰⁷ A class B misdemeanor carries a maximum sentence of 30 days and/or a fine of \$1,500. N.D. Cent. Code § 12.1-32-01(6).

Drone Laws:	
Surveillance Law:	<p>“This chapter prohibits any use of an unmanned aerial vehicle for:</p> <ul style="list-style-type: none"> a. Domestic use in private surveillance. A law enforcement agency may not authorize the use of, including granting a permit to use, an unmanned aerial vehicle to permit any private person to conduct surveillance on any other private person without the express, informed consent of that other person or the owner of any real property on which that other private person is present. b. Surveillance of the lawful exercise of constitutional rights, unless the surveillance is otherwise allowed under this chapter.” N.D. Cent. Code § 29-29.4-05(2).
Exception:	<p>“Exceptions. This Act does not prohibit any use of an unmanned aerial vehicle for surveillance during the course of ... (4) Research, education, training, testing, or development efforts undertaken by or in conjunction with a school or institution of higher education within the state and its political subdivisions, nor to public and private collaborators engaged in mutually supported efforts involving research, education, training, testing, or development related to unmanned aerial vehicle systems or unmanned aerial vehicle system technologies and potential applications.” N.D. Cent. Code § 29-29.4-04.</p>
Wildlife Management Areas:	<p>“A person may not operate a drone or any radio-controlled aircraft while on any state wildlife management area unless authorized by the director or the director’s designee.” N.D. Admin. Code 30-04-02-22(1).</p>
Stalking Laws:	
Criminal Law:	<p>“1. As used in this section:</p> <ul style="list-style-type: none"> a. ‘Course of conduct’ means a pattern of conduct consisting of two or more acts evidencing a continuity of purpose. The term does not include constitutionally protected activity. b. ‘Immediate family’ means a spouse, parent, child, or sibling. The term also includes any other individual who regularly resides in the household or who within the prior six months regularly resided in the household. c. ‘Stalk’ means: <ul style="list-style-type: none"> (1) To engage in an intentional course of conduct directed at a specific person which frightens, intimidates, or harasses that person and which serves no legitimate purpose. The course of conduct may be directed toward that person or a member of that person’s immediate family and must cause a reasonable person to experience fear, intimidation, or harassment; or (2) The unauthorized tracking of the person’s movements or location through the use of a global positioning system or other electronic means that would cause a reasonable person to be frightened, intimidated, or harassed and which serves no legitimate purpose. <p>2. A person may not intentionally stalk another person.” N.D. Cent. Code § 12.1-17-07.1.</p>

Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Allows:	“[A]ny credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of this article[,]” which regulates air pollution. N.D. Admin. Code § 33-15-01-17(2).
Prohibitive by Effect:	Evidence is presumed to be credible if it is collected in accordance with “any procedures and methods promulgated pursuant to sections 504(b) or 114(a)(3) of the Federal Clean Air Act.” N.D. Admin. Code § 33-15-14-06.
Explicitly Prohibits:	<p>“1. Information obtained from an unmanned aerial vehicle is not admissible in a prosecution or proceeding within the state unless the information was obtained:</p> <p style="padding-left: 40px;">a. Pursuant to the authority of a search warrant; or</p> <p style="padding-left: 40px;">b. In accordance with exceptions to the warrant requirement.</p> <p>2. Information obtained from the operation of an unmanned aerial vehicle may not be used in an affidavit of probable cause in an effort to obtain a search warrant, unless the information was obtained under the circumstances described in subdivision a or b of subsection 1 or was obtained through the monitoring of public lands or international borders.” N.D. Cent. Code § 29-29.4-02.</p>
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support or will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.” N.D. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” N.D. R. Evid. 901(a).
Expert Testimony:	“A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue.” N.D. R. Evid. 702; <i>see also State v. Hernandez</i> , 707 N.W. 2d 449, 453–454 (N.D. 2005) (“This Court has never explicitly adopted <i>Daubert</i> and <i>Kumho Tire</i> Under North Dakota law, the admission of expert testimony is governed by N.D.R.Ev. 702.”).

Ohio



Ongoing Projects:

State Project(s):	<p>The Ohio Department of Natural Resources (“ODNR”) runs a volunteer water quality monitoring program: Stream Quality Monitoring (“SQM”). <i>See Stream Quality</i>, OHIO DEP’T OF NAT. RESOURCES, http://watercraft.ohiodnr.gov/sqm (last visited Feb. 7, 2019). Through SQM, volunteers monitor macroinvertebrate populations, using them as indicator species for water quality. <i>See id.</i></p> <p>ODNR’s Division of Wildlife supports multiple wildlife observation citizen science projects, including the Ohio Frog and Toad Calling Survey, Breeding Bird Atlas II, Bowhunter Survey, Spider Survey, and the Ohio Dragonfly Survey. <i>See Citizen Science</i>, OHIO DEP’T OF NAT. RESOURCES, http://wildlife.ohiodnr.gov/education-and-outdoor-discovery/citizen-science (last visited Feb. 7, 2019).</p> <p>The Ohio Biological Survey runs an online BioBlitz campaign through the iNaturalist platform that allows citizens to submit wildlife, plant, and fungi sightings with photographs. <i>See Ohio BioBlitz</i>, INATURALIST, https://www.inaturalist.org/projects/ohio-bioblitz (last visited Feb. 7, 2019).</p>
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Collection of Information:

Ag-Gag Law:	<p>“(B) No person shall commit a specified offense [which includes trespass] involving any agricultural product or equipment with the intent to do any of the following:</p> <ol style="list-style-type: none">(1) Intimidate or coerce a civilian population;(2) Influence the policy of any government by intimidation or coercion;(3) Affect the conduct of any government;(4) Interrupt or interfere with agricultural production, agricultural research, or equipment for purposes of disrupting or influencing, through intimidation or other means, consumer confidence or agricultural production methods.” Ohio Rev. Code Ann. § 901.511.<p>Private parties can recover treble damages in civil suits. <i>Id.</i> § 901.511(D)(1).</p><p>There are also criminal penalties; for a first offense, the violation is classified as “a misdemeanor or a felony that is one degree higher than the penalty for the most serious underlying specified offense,” except that when the underlying offense is a first-degree felony, it is also a first-degree felony. <i>Id.</i> § 901.99(E). On subsequent offenses, the violation is two degrees higher than the most serious underlying offense. <i>See id.</i></p>
Collecting Permits:	<p>A Collecting Permit is required for the collection of plants or animals for research purposes within state parks. <i>See</i> Ohio Rev. Code Ann. § 1533.08; Ohio Admin. Code 1501:46-3-27(A); <i>see also Permits, Ohio State Park Rules &</i></p>

	<i>Permits</i> , ODNR DIVISION OF STATE PARKS & WATERCRAFT, http://parks.ohiodnr.gov/rules (last visited Feb. 7, 2019).
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. Entry upon property does not constitute criminal trespass unless the individual “knowingly enter[s] or remain[s] on the land of another” or “notice against unauthorized access or presence is given by actual communication to the offender, or in a manner prescribed by law, or by posting in a manner reasonably calculated to come to the attention of potential intruders, or by fencing or other enclosure manifestly designed to restrict access.” Ohio Rev. Code Ann. § 2911.21(A)(1) & (3).
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Laws:	
State Parks:	It is “permissible to utilize any... flying machine or aerial apparatus, to take off, ascend, land, alight, or otherwise come to rest upon lands administered by [ODNR’s Division of Parks & Watercraft] where designated airfields or maintained landing zones are located.” Ohio Admin. Code 1501:46-13-11(A).
Stalking Laws:	
Criminal Law:	“No person by engaging in a pattern of conduct shall knowingly cause another person to believe that the offender will cause physical harm to the other person or a family or household member of the other person or cause mental distress to the other person or a family or household member of the other person. In addition to any other basis for the other person’s belief that the offender will cause physical harm to the other person or the other person’s family or household member or mental distress to the other person or the other person’s family or household member, the other person’s belief or mental distress may be based on words or conduct of the offender that are directed at or identify a corporation, association, or other organization that employs the other person or to which the other person belongs.” Ohio Rev. Code Ann. § 2903.211(A)(1).
Use of Information:	
Our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground to support” the claim. Ohio Civ. R. 11.
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Ohio Evid. R. 901(A).
Expert Testimony:	Ohio Rule of Evidence 702 and <i>Daubert</i> standard. <i>See Terry v. Caputo</i> , 875 N.E.2d 72, 77-78 (Ohio 2007).

Oklahoma



Ongoing Projects:

<p>State Project(s):</p>	<p>The Oklahoma Conservation Commission (“OCC”) is required to “[a]dminister the Blue Thumb Program,” Okla. Stat. tit. 27a, § 3-2-106(A)(29), which is a “nonpoint source educational program emphasizing water quality education, including volunteer monitoring[.]” <i>id.</i> § 3-1-103(18). “The primary goal of this program is to educate Oklahoma citizens about [non-point source] pollution, pollution prevention, and stream health.” Okla. Admin. Code 155:40-1-5(2). “The program is designed to recruit, educate, train, and equip volunteer groups across the state to monitor streams of local interest.” <i>Id.</i> 155:40-1-5(3). Its activities include “volunteer monitor training sessions, data management analysis and presentation, maintenance and distribution of water quality monitoring kits and supplies, quality assurance sessions, provision of educational materials for loan, and distribution of curb-marking supplies.” <i>Id.</i> 155:40-1-5(5). The Blue Thumb Program website includes information on current events and opportunities. <i>See Blue Thumb – Stream Protection Through Education</i>, BLUE THUMB, http://www.bluethumbok.com/ (last visited Feb. 7, 2019).</p> <p>The Oklahoma Department of Wildlife Conservation’s Wildlife Diversity Program manages multiple wildlife observation citizen science projects, such as the Oklahoma Nest Box Trails Project, Report a Rare Wildlife Sighting, Report a Whooping Crane Sighting, Report Invasive Species, and Report Texas Horned Lizard Sightings. <i>See Wildlife Diversity Citizen Science Programs</i>, OKLA. DEP’T OF WILDLIFE CONSERVATION, https://www.wildlifedepartment.com/wildlife/wildlife-diversity/citizen-science-programs (last visited Feb. 7, 2019).</p>
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Collection of Information:

<p>Ag-Gag Law:</p>	<p>“A. No person shall, without the effective consent of the owner and with intent to damage the enterprise conducted at the animal facility. . .</p> <ol style="list-style-type: none"> 2. Acquire or otherwise exercise control over an animal facility, an animal or other property from an animal facility, with the intent to deprive the owner of such facility, animal or property; 3. Enter an animal facility, not open to the public, with intent to commit an act prohibited by this section; 4. Enter an animal facility and commit or attempt to commit an act prohibited by this section; 5. Remain concealed in an animal facility, with intent to commit or attempt to commit an act prohibited by this section; 6. Enter or remain on an animal facility when the person has notice that entry is forbidden by any of the following: <ol style="list-style-type: none"> a. written or oral communication with the owner or a person with apparent authority to act for the owner,
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	<p>b. fencing or other enclosure obviously designed to exclude intruders or contain animals, or</p> <p>c. a sign or signs posted on the property or at the entrance to the building</p> <p>B. A violation of any of the provisions in paragraphs 1 through 7 of subsection A of this section shall be a misdemeanor, upon conviction, punishable by a fine not to exceed Five Thousand Dollars (\$5,000.00), with full restitution to be paid for any damage to the property, for replacement of any animals released, and for out-of-pocket expenses incurred as a result of any violation, or by imprisonment in the county jail for a term not to exceed one (1) year, or by both such fine and imprisonment.” Okla. Stat. tit. 21, § 1680.2.</p>
Scientific Purposes License:	“No person may kill or capture wildlife or take their nests or eggs for scientific purposes without having first procured a license [.]” Okla. Stat. Ann. tit. 29, § 4-118(a); <i>see also</i> Okla. Admin. Code 725:30-4-5.
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. In order for entry upon property to constitute criminal trespass, such entry must have been “expressly forbidden[.]” or made “without permission by the owner or lawful occupant . . . when such property [was] posted” with signs forbidding entry. Okla. Stat. tit. 21, § 1835(A). “Property that is fenced or not fenced must have such signs placed conspicuously and at all places where entry to the property is normally expected.” <i>Id.</i>
Agricultural Trespass:	Trespass against “private land of another that is primarily devoted to farming, ranching, or forestry” carries a heightened penalty. ²⁰⁸ Okla. Stat. tit. 21, § 1835.2(A)(1).
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Laws:	
Critical Infrastructure Law:	<p>“[A] person shall not intentionally or knowingly:</p> <ol style="list-style-type: none"> 1. Operate an unmanned aircraft over a critical infrastructure facility if the unmanned aircraft is less than four hundred (400) feet above ground level; 2. Allow an unmanned aircraft to make contact with a critical infrastructure facility, including any person or object on the premises of or within the facility; or 3. Allow an unmanned aircraft to come within a distance of a critical infrastructure facility that is close enough to interfere with the operations of or cause a disturbance to the facility.” Okla. Stat. tit.3, § 322(B). <p>“Critical infrastructure facility” means a fenced or posted property, including, but not limited to: (1) a petroleum or alumina refinery; (2) an electrical power generating facility, substation, switching station or electrical control center; (3) a chemical, polymer or rubber manufacturing facility; (4) a water intake structure, water treatment facility, wastewater treatment plant or pump station; (5) a</p>

²⁰⁸ The maximum penalty for a violation of this section is a \$2,000 fine for a first offense or a \$2,500 fine for subsequent offenses, 6 months in jail, and restitution for actual damages. Okla. Stat. tit. 21, § 1835.2(A)(1).

	<p>natural gas compressor station; (6) a liquid natural gas terminal or storage facility; (7) a gas processing plant, including a plant used in the processing, treatment or fractionation of natural gas or natural gas liquids; (8) a steelmaking facility that uses an electric arc furnace to make steel; (9) a facility identified and regulated by the United States Department of Homeland Security Chemical Facility Anti-Terrorism Standards (CFATS) program; (10) a dam that is regulated by the state or federal government; (11) a natural gas distribution utility facility, including, but not limited to, pipeline interconnections, a city gate or town border station, metering station, aboveground piping, a regulator station and a natural gas storage facility; or (12) any aboveground portion of an oil, gas, hazardous liquid or chemical pipeline. <i>Id.</i> § 322(A)(1).</p> <p><u>Civil Penalty:</u> “Any person in violation of this section may be civilly liable for damages to the critical infrastructure facility to include, but not be limited to, damage to property, the environment or human health.” <i>Id.</i> § 322(D).</p>
Exception:	This section does not apply to “a person who has the prior written consent of the owner or operator of the critical infrastructure facility” or “[a]n operator of an unmanned aircraft that is being used for a commercial purpose, if the operator is authorized by the Federal Aviation Administration to conduct operations over that airspace.” Okla. Stat. tit.3, § 322(C)(7) & (9).
Critical Infrastructure Laws:	
Drone Law:	<i>See supra</i> “Drone Laws.”
Stalking Laws:	
Criminal Law:	“Any person who willfully, maliciously, and repeatedly follows or harasses another person in a manner that: <ol style="list-style-type: none"> 1. Would cause a reasonable person or a member of the immediate family of that person as defined in subsection F of this section to feel frightened, intimidated, threatened, harassed, or molested; and 2. Actually causes the person being followed or harassed to feel terrorized, frightened, intimidated, threatened, harassed, or molested, shall, upon conviction, be guilty of the crime of stalking, which is a misdemeanor punishable by imprisonment in a county jail for not more than one (1) year, or by a fine of not more than One Thousand Dollars (\$1,000.00), or by both such fine and imprisonment.” Okla. Stat. tit. 21, § 1173(A).
Use of Information:	
Although our research is incomplete, these provisions could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	“For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any provision of the Oklahoma [Clean Air Act] implementation plan, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements[.]” Okla. Admin. Code § 252:100-43-6. “Credible evidence” is not defined.

	OCC manages a volunteer program that monitors nonpoint source water pollution. <i>See supra</i> “Ongoing Projects.” Among other things, OCC uses the program to “provide[] support to cities to help meet the requirements of their Phase II stormwater permits[,]” Okla. Admin. Code § 155:40-1-5(7), and targets areas “where volunteer data indicate a need,” <i>id.</i> § 155:40-1-5(6).
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “[t]he allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Okla. Stat. tit. 12, § 2011(B)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims it to be.” Okla. Stat. tit. 12, § 2901(A).
Expert Testimony:	Section 2702 and <i>Daubert</i> standard. <i>See</i> Okla. Stat. tit. 12, § 2702; <i>Christian v. Gray</i> , 65 P.3d 591, 596-600 (Okla. 2003) (“[W]e [] adopt <i>Daubert</i> and <i>Kumho</i> as appropriate standards for Oklahoma trial courts in deciding the admissibility of expert testimony in civil matters.”).

Oregon



Ongoing Projects:

Federal Project(s)
Operating in the
State:

The U.S. Environmental Protection Agency’s (“EPA”) Region 10 office operates a project in Portland that aims to incorporate citizen science into decision making as the city develops plans for school bus routes and stops. *See Making a Visible Difference (MVD) in/NE Portland: Engaging Communities, Using Citizen Science to Assess and Address Children’s Environmental Health from Transit and Air Pollution*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/228/#> (last visited Feb. 7, 2019). The project’s goal is “to make a visible difference with citizen science such that it becomes a bridge for the community to independently uncover links and solutions to local environmental concerns.” *Id.*

The Coastal Observation and Seabird Survey (“COASST”) is a citizen science program established to identify the carcasses of marine birds found on beaches along the coast of the Pacific Northwest. *See Coastal Observation And Seabird Survey Team (COASST)*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/36/#> (last visited Feb. 7, 2019); *see also COASST*, <https://depts.washington.edu/coasst/> (last visited Feb. 7, 2019).

The U.S. Fish and Wildlife Service in collaboration with Audubon and the Cornell Lab of Ornithology launched a citizen science survey for California brown pelicans across the Pacific coast. *See California Brown Pelican Citizen Science Survey*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/219/#> (last visited Feb. 7, 2019). The survey occurs biannually across “100 sites in Washington, Oregon, and California, and [helps] conservation professionals collect important data on the distribution and abundance of California brown pelicans.” *Id.*; *see also Pacific Brown Pelican Survey*, AUDOBON, <http://ca.audubon.org/brownpelicansurvey> (last visited Feb. 7, 2019).

State Project(s):

The Oregon Department of Environmental Quality (“DEQ”) manages a Volunteer Monitoring Program for water quality. *See Volunteer Monitoring*, OR. DEP’T OF ENVTL. QUALITY, <https://www.oregon.gov/deq/wq/Pages/WQ-Monitoring-Volunteer.aspx> (last visited Feb. 7, 2019). The program’s objectives are to “[p]rovide resources to groups interested in conducting volunteer monitoring,” “[e]xpand and support the volunteer monitoring efforts across the state,” “[p]romote consistent, comparable data collection techniques,” “[i]mprove and document the quality of data collected by volunteer groups,” and “[s]upport the transformation of volunteer generated water quality data into information.” *Id.* DEQ uses data collected through this program for water quality and watershed assessments, as well as TMDL documentation and development. *See id.* Resources for volunteers are available on DEQ’s website. *See Volunteer Monitoring Resources*, OR. DEP’T OF ENVTL. QUALITY, <https://www.oregon.gov/deq/wq/Pages/WQ-Monitoring-Resources.aspx> (last visited Feb. 7, 2019).

Collection of Information:	
Ag-Gag Law:	<p>“(1) A person commits the crime of interference with livestock production when the person, with the intent to interfere with livestock production:</p> <p style="padding-left: 40px;">(a) Takes, appropriates, obtains or withholds livestock from the owner thereof, or causes the loss, death or injury of any livestock maintained at a livestock production facility;</p> <p style="padding-left: 40px;">(b) Damages, vandalizes or steals any property located on a livestock production facility; or</p> <p style="padding-left: 40px;">(c) Obtains access to a livestock production facility to perform any act contained in this subsection or any other act not authorized by the livestock production facility.</p> <p>(2) The crime of interference with livestock production is:</p> <p style="padding-left: 40px;">(a) A Class C felony²⁰⁹ if damage to the livestock production facility is \$2,500 or more; or</p> <p style="padding-left: 40px;">(b) A Class A misdemeanor²¹⁰ if there is no damage to the livestock production facility or if damage to the facility is less than \$2,500.”</p> <p style="text-align: right;">Or. Rev. Stat. § 167.388.</p>
Scientific/ Educational Collection or Research Permits	<p>The Oregon Parks and Recreation Department (“OPRD”) generally requires a scientific research and collection permit for most scientific activities conducted on the Department’s lands. <i>See</i> Or. Admin. R. 736-045-0440; <i>id.</i> 736-021-0090(10); <i>see also Scientific Research Collection Permits</i>, OR. PARKS & RECREATION DEP’T, https://www.oregon.gov/oprd/NATRES/Pages/permitting.a.spx (last visited Feb. 7, 2019).</p>
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No. Criminal liability does not attach if lack of notice would cause a reasonable person to believe that she is not required to obtain permission to enter or remain on the property.</p> <p>“A person commits the crime of criminal trespass in the second degree if the person enters or remains unlawfully ... in or upon premises.” Or. Rev. Stat. § 164.245(1).</p> <p>To “enter or remain unlawfully” means “[t]o enter or remain in or upon premises when the premises, at the time of such entry or remaining, <i>are not open to the public</i> and when the entrant is not otherwise licensed or privileged to do so.” <i>Id.</i> § 164.205(3)(a) (emphasis added).</p> <p>“Open to the public” means “premises which by their physical nature, function, custom, usage, <i>notice or lack thereof</i> or other circumstances at the time would cause a reasonable person to believe that no permission to enter or remain is required.” <i>Id.</i> § 164.205(4) (emphasis added).</p>

²⁰⁹ A Class C felony is punishable by a maximum fine of \$125,000, Or. Rev. Stat. § 161.625(1)(d), and/or a fixed term of imprisonment not to exceed 5 years, *id.* § 161.605(3).

²¹⁰ A Class A misdemeanor is punishable by a maximum fine of \$6,250, Or. Rev. Stat. § 161.635(1)(a), and/or a fixed term of imprisonment not to exceed 364 days, *id.* § 161.615(1).

Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Laws:	
Harassment Law:	“[A] person may not operate an unmanned aircraft system over the boundaries of privately owned premises in a manner so as to intentionally, knowingly or recklessly harass or annoy the owner or occupant of the privately owned premises.” Or. Rev. Stat. § 837.370(1). A violation of this section is a Class B violation. ²¹¹ <i>Id.</i> § 837.370(3)(a).
Low-Flying Law (Civil):	<p>“[A] person who owns or lawfully occupies real property in this state may bring an action against any person or public body that operates an unmanned aircraft system that is flown over the property if:</p> <p>(a) The operator of the unmanned aircraft system has flown the unmanned aircraft system over the property on at least one previous occasion; and</p> <p>(b) The person notified the owner or operator of the unmanned aircraft system that the person did not want the unmanned aircraft system flown over the property.” Or. Rev. Stat. § 837.380(1).</p> <p><u>Exceptions:</u></p> <p>“A person may not bring an action under this section if:</p> <p>(a) The unmanned aircraft system is lawfully in the flight path for landing at an airport, airfield or runway; and</p> <p>(b) The unmanned aircraft system is in the process of taking off or landing.” <i>Id.</i> § 837.380.</p>
Preemption:	“Except as expressly authorized by state statute, the authority to regulate the ownership or operation of unmanned aircraft systems is vested solely in the Legislative Assembly. Except as expressly authorized by state statute, a local government, as defined ORS 174.116, may not enact an ordinance or resolution that regulates the ownership or operation of unmanned aircraft systems or otherwise engage in the regulation of the ownership or operation of unmanned aircraft systems.” Or. Rev. Stat. § 837.385.
Department of Fish & Wildlife Lands:	“Drones/UAV’s may not be flown within the boundary of any [Oregon Department of Fish & Wildlife (“ODFW”)] owned, managed, or controlled area except for administrative use or by permit issued by ODFW.” Or. Admin. R. 635-008-0050(10).
State Parks:	Please call 1-800-551-6949 for park specific rules.
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Drone Law:	“[A] person commits a Class A violation ²¹² if the person intentionally or knowingly:
	(a) Operates an unmanned aircraft system over a critical infrastructure facility at an altitude not higher than 400 feet above ground level; or

²¹¹ A Class B violation is punishable by a maximum fine of \$1,000. Or. Rev. Stat. § 153.018(2)(b).

²¹² A Class A violation is punishable by a maximum fine of \$2,000. Or. Rev. Stat. § 153.018(2)(a).

	<p>(b) Allows an unmanned aircraft system to make contact with a critical infrastructure facility, including any person or object on the premises of or within the facility.” Or. Rev. Stat. § 837.372(2).</p> <p>“As used in this section, ‘critical infrastructure facility’ means any of the following facilities, if completely enclosed by a fence or other physical barrier that is obviously designed to exclude intruders, or if marked with a sign conspicuously posted on the property that indicates that entry is forbidden: (a) A petroleum or alumina refinery; (b) An electrical power generating facility, substation, switching station or electrical control center; (c) A chemical, polymer or rubber manufacturing facility; (d) A water intake structure, water treatment facility, wastewater treatment plant or pump station; (e) A natural gas compressor station; (f) A liquid natural gas terminal or storage facility; ... (i) A gas processing plant, including a plant used in the processing, treatment or fractionation of natural gas; ... (k) A steelmaking facility that uses an electric arc furnace to make steel; (L) A dam that is classified as a high hazard by the Water Resources Department; [or] (m) Any portion of an aboveground oil, gas or chemical pipeline that is enclosed by a fence or other physical barrier that is obviously designed to exclude intruders.” <i>Id.</i> § 837.372(1).</p>
Exception:	<p>The above law does not apply if the individual driving the drone has “the prior written consent of the owner or operator of the critical infrastructure facility,” “the prior written consent of the owner or occupant of the property on which the critical infrastructure facility is located,” or is operating the drone for “commercial purposes in compliance with authorization granted by the Federal Aviation Administration.” Or. Rev. Stat. § 837.372(3)(f), (h) & (i).</p>
Stalking Laws:	
Criminal Law:	<p>“A person commits the crime of stalking if:</p> <ul style="list-style-type: none"> (a) The person knowingly alarms or coerces another person or a member of that person’s immediate family or household by engaging in repeated and unwanted contact with the other person; (b) It is objectively reasonable for a person in the victim’s situation to have been alarmed or coerced by the contact; and (c) The repeated and unwanted contact causes the victim reasonable apprehension regarding the personal safety of the victim or a member of the victim’s immediate family or household.” Or. Rev. Stat. § 163.732(1).
Civil Law:	<p>“A person may bring a civil action in a circuit court for a court’s stalking protective order or for damages, or both, against a person if:</p> <ul style="list-style-type: none"> (a) The person intentionally, knowingly or recklessly engages in repeated and unwanted contact with the other person or a member of that person’s immediate family or household thereby alarming or coercing the other person; (b) It is objectively reasonable for a person in the victim’s situation to have been alarmed or coerced by the contact; and (c) The repeated and unwanted contact causes the victim reasonable apprehension regarding the personal safety of the victim or a member of

	the victim’s immediate family or household.” Or. Rev. Stat. § 30.866(1).
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	“[A]ny credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of” stationary source reporting requirements under the state’s air pollution control law. Or. Admin. R. 340-214-0120. “Credible evidence” is not defined.
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claims “are supported by evidence.” OR. R. CIV. P. 17(C)(4).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Or. Rev. Stat. § 40.505(1).
Expert Testimony:	<i>Brown-Daubert</i> standard. <i>See State v. O’Key</i> , 899 P.2d 663, 675-80 (Or. 1995).

Pennsylvania



Ongoing Projects:

State Project(s):	<p>The Pennsylvania Department of Environmental Protection (“PADEP”) solicits data collected by volunteers, provided that it complies with the quality assurance protocol developed by the state. <i>See</i> P.A. DEP’T OF ENVTL. PROT., DATA SUBMISSION FORM (2018), http://files.dep.state.pa.us/Water/Drinking%20Water%20and%20Facility%20Regulation/WaterQualityPortalFiles/Data_Solicitation_Document_2018.pdf. PADEP uses this data to comply with the Clean Water Act section 303(d) listing requirement. <i>Id.</i>; <i>see also</i> <i>Data Collection Protocols</i>, P.A. DEP’T OF ENVTL. PROT., https://www.dep.pa.gov/Business/Water/CleanWater/WaterQuality/Pages/Data-Collection-Protocols.aspx (last visited Feb. 7, 2019).</p> <p>The Pennsylvania Game Commission manages multiple wildlife observation citizen science projects, including: the Comprehensive Pennsylvania Osprey Nest Survey; the Heron Colony Observation Survey; the Marsh Birds Survey; the Sandhill Crane Survey; the Appalachian Bat Count; and the Pennsylvania Mammals Atlas. <i>See</i> <i>Get Involved</i>, P.A. GAME COMMISSION, https://www.pgc.pa.gov/InformationResources/GetInvolved/Pages/default.aspx (last visited Feb. 7, 2019).</p> <p>Smell PGH is a smartphone application available for smartphone users in Pittsburgh, allowing them to report foul odors and related symptoms. <i>See</i> <i>Smell, Submit, Share!</i>, SMELL PITTSBURGH, https://smellpgh.org/ (last visited Feb. 7, 2019). This phone application was developed with the Allegheny County Health Department (“ACHD”) such that the ACHD “receive[s] all Smell PGH odor complaints as they are submitted...[and can] use this information to better monitor [] air quality and identify pollution sources.” <i>Id.</i>; <i>see also</i> <i>Smell Pittsburgh</i>, CARNEGIE MELLON CREATE LAB, https://cmucreatelab.org/projects/Smell_Pittsburgh (last visited Feb. 7, 2019).</p>
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Collection of Information:

Scientific Collectors’ Permit:	A permit is required to collect or take wildlife for scientific or educational purposes. <i>See</i> 30 Pa. Cons. Stat. § 2905; 58 Pa. Code § 51.71.
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Trespassing Laws:

Criminal Liability for Trespass Despite Lack of Notice:	No. A person commits criminal trespass if, “knowing that he is not licensed or privileged to do so, he enters or remains in any place as to which notice against trespass is given by: (i) actual communication . . . (ii) posting . . . (iii) fencing . . . [or] notices[.]” 18 Pa. Cons. Stat. § 3503(b)(1).
Agricultural Trespass:	“A person commits an offense if knowing that he is not licensed or privileged to do so he...enters or remains on any agricultural or other open lands when such lands are posted in a manner prescribed by law or reasonably likely to come to the person’s attention or are fenced or enclosed in a manner manifestly designed to exclude trespassers or to confine domestic animals....” 18 Pa. Cons. Stat.

	<p>§ 3503(b.2)(1)(i).</p> <p>“An offense under paragraph (1)(i) constitutes a misdemeanor of the third degree and is punishable by imprisonment for a term of not more than one year and a fine of not less than \$250.” <i>Id.</i> § 3503(b.2)(2)(i).</p>
Agricultural Biosecurity Area Trespass:	<p>“(1) A person commits an offense if the person does any of the following:</p> <p>(i) Enters an agricultural biosecurity area, knowing that the person is not licensed or privileged to do so.</p> <p>(ii) Knowingly or recklessly fails to perform reasonable measures for biosecurity that by posted notice are required to be performed for entry to the agricultural biosecurity area.” 18 Pa. Cons. Stat. § 3503(b.3).</p> <p>An offense under subsection (1)(i) constitutes a misdemeanor of the third degree²¹³ and an offense under paragraph (1)(ii) constitutes a summary offense²¹⁴. <i>Id.</i> § 3503(b.3)(3)(i)-(ii).</p>
Drone Laws:	
Surveillance Law:	<p>“A person commits the offense of unlawful use of unmanned aircraft if the person uses an unmanned aircraft intentionally or knowingly to:</p> <p>(1) Conduct surveillance of another person in a private place.</p> <p>(2) Operate in a manner which places another person in reasonable fear of bodily injury....” 18 Pa. Cons. Stat. § 3505(a).</p> <p>“An offense under subsection (a)(1) or (2) is a summary offense punishable by a fine of up to \$300[.]” <i>Id.</i> § 3505(b)(1).</p>
Exception:	<p>“Subsection (a)(1) shall not apply if the conduct proscribed is committed by a person engaged in aerial data collection if:</p> <p>(1) the person utilized the unmanned aircraft in a manner which complies with Federal Aviation Administration regulations or the unmanned aircraft is authorized by an exemption that is issued by the Federal Aviation Administration; and</p> <p>(2) the person did not knowingly or intentionally conduct surveillance of another person in a private place.” 18 Pa. Cons. Stat. § 3505(e).</p>
Preemption:	<p>“The provisions of 18 Pa.C.S. § 3505 (relating to unlawful use of unmanned aircraft) shall preempt and supersede any ordinance, resolution, rule or other enactment of a municipality regulating the ownership or operation of unmanned aircraft. As of the effective date of this section [January 10, 2019], a municipality shall not regulate the ownership or operation of unmanned aircraft unless expressly authorized by statute.” 53 Pa. Cons. Stat. § 305(a).</p>
State Parks:	<p>The Pennsylvania Department of Conservation and Natural Resources’ Bureau of State Parks permits drone use at six designated flying sites within the following state parks: Beltzville State Park; Benjamin Rush State Park; Hillman</p>

²¹³ A misdemeanor in the third degree is punishable by a maximum fine of \$2,500, 18 Pa. Cons. Stat. § 1101(6), and/or a fixed term of imprisonment not to exceed one year, *id.* § 1104(3).

²¹⁴ A summary offense is punishable by a maximum fine of \$300, 18 Pa. Cons. Stat. § 1101(7), and/or a fixed term of imprisonment not to exceed 90 days, *id.* § 1105.

	<p>State Park; Lackawanna State Park; Prompton State Park; and Tuscarora State Park. <i>Unmanned Aerial Systems (UAS) and Drones Use</i>, DEP’T OF CONSERVATION & NAT. RESOURCES, https://www.dcnr.pa.gov/StateParks/RulesAndRegulations/UnmannedAerialSystemsandDrones/Pages/default.aspx (last visited Feb. 7, 2019). The use of drones at other state parks is prohibited. <i>See id.</i></p>
Stalking Laws:	
Criminal Law:	<p>“A person commits the crime of stalking when the person either:</p> <p>(1) engages in a course of conduct or repeatedly commits acts toward another person, including following the person without proper authority, under circumstances which demonstrate either an intent to place such other person in reasonable fear of bodily injury or to cause substantial emotional distress to such other person; or</p> <p>(2) engages in a course of conduct or repeatedly communicates to another person under circumstances which demonstrate or communicate either an intent to place such other person in reasonable fear of bodily injury or to cause substantial emotional distress to such other person.”</p> <p>18 Pa. Cons. Stat. § 2709.1(a).</p>
Use of Information:	
<p>Although our research is incomplete, these provisions address the use of information collected by citizens.</p>	
Explicitly Allows:	<p>PADEP is authorized to receive citizen-collected air quality information if the conditions listed below are met. <i>See</i> 25 Pa. Code § 139.2.</p>
Prohibitive by Effect:	<p>PADEP may only accept citizen-collected air quality information if: (1) [PADEP] has been given reasonable notice of the sampling and testing and has been given reasonable opportunity to observe and participate in the sampling and testing; (2) The sampling and testing is conducted under the direct supervision of persons qualified, by training and experience, to conduct the sampling and testing; (3) Procedures for the sampling and testing are in accord with [PADEP’s regulations]; and (4) The reports of the sampling and testing are accurate and comprehensive. 25 Pa. Code § 139.2.</p>
Evidentiary Standard:	
Pleading a Claim:	<p>Requires certification that “the factual allegations have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Pa. R. Civ. P. No. 1023.1(c)(3).</p>
Authentication or Chain of Custody:	<p>“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Pa. R. Evid. 901(a).</p>
Expert Testimony:	<p><i>Frye</i> for novel science. <i>See Commonwealth. v. Walker</i>, 92 A.3d 766, 789-90 (Pa. 2014); <i>Grady v. Frito-Lay, Inc.</i>, 839 A.2d 1038, 1047 (Pa. 2003).</p>

Puerto Rico*



Proyectos En Desarrollo/Ongoing Projects:

<p>Proyecto(s) Federal(es) Dirigido(s) en Puerto Rico/Federal Project(s) Operating in the State:</p>	<p>A partir de 2015, el Programa Nacional de Monitoreo de Arrecifes Coralinos de la Administración Nacional Oceánica y Atmosférica (“NOAA”, por sus iniciales en inglés) inició un proyecto para evaluar la condición de los recursos marinos en la Reserva Marina Tres Palmas en Rincón, Puerto Rico. <i>Evaluating the Condition of Marine Resources in the Reserva Marina Tres Palmas, Rincon</i>, CITIZENSCIENCE.GOV, https://www.citizenscience.gov/catalog/465/# (última vez que fue accedido 7 de febrero de 2019). El proyecto, a diferencia de los demás en el programa de NOAA, incluye un componente fuerte de participación ciudadana en la recopilación y análisis de los datos. <i>Véase id.; véase también RESERVA MARINA TRES PALMAS, FIRMA DE ACUERDOS COLABORATIVOS PARA EL MANEJO DE LA RESERVA MARINA TRES PALMAS 4 (2016)</i>, https://bit.ly/2Qv8XDI.</p> <p>El Servicio Forestal y el Departamento de Agricultura de los EE.UU. realizan conjuntamente un recuento anual de aves para Navidad en el Bosque Nacional El Yunque para observar y hacer inventario de los especies como parte del programa de la Sociedad Audubon Nacional. <i>22nd Fajardo Christmas Bird Count</i>, CITIZENSCIENCE.GOV, https://www.citizenscience.gov/catalog/238/# (última vez que fue accedido 7 de febrero de 2019).</p> <p>Beginning in 2015, the National Oceanic and Atmospheric Administration’s (“NOAA”) National Coral Reef Monitoring Program began a project to evaluate the condition of marine resources in the Reserva Marina Tres Palmas in Rincon, Puerto Rico. The project, unlike others in NOAA’s program, includes a strong citizen participation component in the collection and analysis of data.</p> <p>The U.S. Forest Service and U.S. Department of Agriculture jointly conduct an annual Christmas Bird Count in the El Yunque National Forest to observe and inventory species as part of the National Audubon Society program.</p>
<p>Proyecto(s) Notable(s)/Notable Project(s):</p>	<p>En Rincón, el Cuerpo Especial de Agua Azul de la Fundación Surfrider ha brindado capacitaciones aceleradas a los ciudadanos para realizar pruebas de calidad del agua después del huracán María. <i>Véase Surfrider Foundation’s Blue Water Task Force Rincon</i>, SCISTARTER, https://scistarter.com/project/15069-Surfrider-Foundations-Blue-Water-Task-Force-Rincon (última vez que fue accedido 7 de febrero de 2019); <i>véase también BWTF Water Testing Program</i>, FUNDACIÓN SURFRIDER RINCÓN, https://rincon.surfrider.org/programs/bwtf-water-testing-program/ (última vez que fue accedido 7 de febrero de 2019). Después del muestreo, el equipo coloca señales codificadas por colores para notificar a las personas los resultados. <i>Véase Bobby Bascomb, With Government Sidelined, Citizen Scientists Test Water Quality in Puerto Rico</i>, PRI LIVING ON</p>

	<p>EARTH (16 de sept. de 2018), https://www.pri.org/stories/2018-09-16/government-sidelined-citizen-scientists-test-water-quality-puerto-rico. El Cuerpo Especial es el programa de ciencia ciudadana más grande de Puerto Rico. Véase <i>id.</i></p>
	<p>In Rincón, the Surfrider Foundation’s Blue Water Task Force has provided expedited training to citizens to conduct water quality testing after Hurricane Maria. After sampling, the team puts up color-coded signs to notify people of the results. The Task Force is the largest citizen science program in Puerto Rico.</p>
<p>Leyes de Entrada Ilegal/Trespassing Laws:</p>	
<p>Responsabilidad Penal por Entrada Ilegal a Pesar de la Falta de Aviso/ Criminal Liability for Trespass Despite Lack of Notice:</p>	<p>“Artículo 197. — Entrada en heredad ajena.</p> <p>Incurrirá en delito menos grave,²¹⁵ toda persona que sin autorización del dueño o encargado de la misma entre a una finca o heredad ajena en cualquiera de las siguientes circunstancias:</p> <ul style="list-style-type: none"> (a) forzando una cerca o palizada; o (b) con el propósito de cometer un delito; o (c) con el propósito de ocupar propiedad privada o maquinarias que son parte de una obra de construcción o movimiento de terreno que cuente con los debidos permisos. <p>Constituirá delito menos grave y será sancionada con pena de reclusión por un término fijo de tres (3) años, la entrada a una finca o heredad ajena, cuando se configure a su vez el delito de apropiación ilegal y el bien apropiado ilegalmente sea algún producto agrícola.</p> <p>En aquellos casos en que el valor monetario del producto agrícola apropiado exceda los diez mil dólares (\$10,000) la persona incurrirá en delito grave y será sancionada con pena de reclusión por un término fijo de ocho (8) años.” 33 L.P.R.A. § 5267.</p>
	<p>“Article 197. — Entering into the estate of others.</p> <p>Any person who, without the authorization of the owner or the person in charge of the same, enters a farm or property of another in any of the following circumstances shall incur a misdemeanor²¹⁶:</p> <ul style="list-style-type: none"> (a) Breaking into a fence or fenced enclosure; or (b) for the purpose of committing a crime; or (c) for the purpose of occupying private property or machinery that is part of construction or movement of land that has proper permits. <p>Entry upon an estate or other property, when combined with the crime of illegal appropriation and the illegally appropriated good is some agricultural product,</p>

²¹⁵ “Es delito menos grave todo aquél que apareja pena de reclusión por un término que no exceda de seis (6) meses, pena de multa que no exceda de cinco mil (5,000) dólares o pena de restricción domiciliaria o de servicios comunitarios que no exceda de seis (6) meses.” 33 L.P.R.A. § 5022.

²¹⁶ “A misdemeanor is a crime that entails a penalty of imprisonment for a term not exceeding six (6) months, a fine not exceeding five thousand (5,000) dollars or a penalty of restriction of domicile or community services that does not exceed six (6) months.” 33 L.P.R.A. § 5022.

	<p>constitutes a misdemeanor and will be sanctioned with imprisonment for a fixed term of three (3) years.</p> <p>In those cases in which the monetary value of the appropriated agricultural product exceeds ten thousand dollars (\$10,000) the person will incur a felony and will be punished with imprisonment for a fixed term of eight (8) years.”</p> <p>33 L.P.R.A. § 5267.</p>
Leyes de Uso de Aeronaves No Tripuladas/ Drone Laws:	
La Ley/Law:	<p>No hay leyes de drones en Puerto Rico. El 24 de enero de 2017, se presentó el Proyecto de la Cámara de Representantes 667 con el propósito de regular el uso de aviones no tripulados cerca de las instalaciones de seguridad pública.²¹⁷ En mayo de 2017, la propuesta de ley fue presentado en audiencias públicas.²¹⁸ Hasta la fecha, la propuesta de ley no ha sido promulgado. El único recurso disponible para los ciudadanos que buscan la restitución por daños causados por drones es el Artículo 1802 del Código Civil de Puerto Rico (31 L.P.R.A. § 5141), que cubre los daños civiles causados por negligencia.²¹⁹</p> <p>There are no drone laws in Puerto Rico. On January 24, 2017, House Bill 667 was introduced with the purpose of regulating drone use near public safety facilities. In May 2017, the bill was presented in public hearings. As of this date, the bill has not been enacted. The only available recourse to citizens seeking restitution for damages caused by drones is Article 1802 of the Code Civil of Puerto Rico (31 L.P.R.A. § 5141), which covers civil damages caused by negligence.</p>
Leyes de Acoso/Stalking Laws:	
Derecho Penal/Criminal Law:	<p>“Toda persona que intencionalmente manifieste un patrón constante o repetitivo de conducta de acoso dirigido a intimidar a una determinada persona a los efectos de que ella, o cualquier miembro de su familia podría sufrir daños, en su persona o en sus bienes; o que mantenga dicho patrón de conducta a sabiendas de que determinada persona razonablemente podría sentirse intimidada incurrirá en delito menos grave.</p> <p>El tribunal podrá imponer la pena de restitución, además de la pena de reclusión establecida.” 33 L.P.R.A. § 4014(a).</p>

²¹⁷Medida P C0667, “Ley de Protección del Espacio Aéreo y Uso de Aeronaves No Tripuladas sobre Instalaciones de Seguridad del Estado Libre Asociado de Puerto Rico”, OFICINA DE SERVICIOS LEGISLATIVOS, http://www.oslpr.org/legislatura/tl2017/tl_medida_print2.asp?r=PC0667 (última actualización 7 de febrero de 2019).

²¹⁸ Véase RUBÉN ORTIZ MUSSENDEN, HECTOR L. SANTIAGO GÓMEZ & JOSÚE TORRES BÁEZ, UNIVERSIDAD INTERAMERICANA DE PUERTO RICO FACULTAD DE DERECHO, LA PRIVACIDAD Y LOS APARATOS VOLADORES A CONTROL REMOTO RECREACIONALES “DRONES” 16 (2017), <http://www.informatica-juridica.com/wp-content/uploads/2017/05/LA-PRIVACIDAD-Y-LOS-APARATOS-VOLADORES-A-CONTROL-REMOTO-RECREACIONALES-DRONES.pdf> [en adelante, “2017 Law School Drone Paper”]; véase también *Necesaria legislación sobre drones*, VOCERO (16 de agosto de 2018), https://www.elvocero.com/gobierno/necesaria-legislacion-sobre-drones/article_fd96ba16-a164-11e8-a8fa-0fc8f5781ec5.html.

²¹⁹ Véase 2017 Law School Drone Paper, *supra* nota 218 en la página 16.

	<p>“Any person who intentionally exhibits a constant or repetitive pattern of stalking aimed at intimidating a specific person to the effect that said person or any member of her family could suffer personal or property damage; or that maintains said type of conduct knowing that a certain person could reasonably feel intimidated shall be guilty of a misdemeanor.</p> <p>The court may order restitution in addition to the term of imprisonment thus imposed.” 33 L.P.R.A. § 4014(a).</p>
<p>Uso de la información/ Use of Information:</p>	
<p>Aunque está incompleta, nuestra investigación no ha encontrado ninguna disposición relacionada con el uso de la información recopilada por los ciudadanos en acciones ejecutivas o administrativas / legislativas.</p>	
<p>Although incomplete, our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.</p>	
<p>Normas de Evidencia /Evidentiary Standards:</p>	
<p>Alegando una Reclamación/ Pleading a Claim:</p>	<p>Certificación de que el escrito “está bien fundado en los hechos y respaldado por el derecho vigente.” 32 L.P.R.A. Ap. V, 9.1.</p>
	<p>Certification that the claim is “well-founded in facts and supported by current law.” 32 L.P.R.A. Ap. V, 9.1.</p>
<p>Autenticación o Cadena de Custodia/ Authentication or Chain of Custody:</p>	<p>“El requisito de autenticación o identificación como una condición previa a la admisibilidad se satisface con la presentación de evidencia suficiente para sostener una determinación de que la materia en cuestión es lo que la persona proponente sostiene.” 32 L.P.R.A. Ap. VI, R. 901(A).</p>
	<p>“The requirement of authentication or identification as a prerequisite to admissibility is satisfied by the presentation of sufficient evidence to support a determination that the matter in question is what the proponent claims.” 32 L.P.R.A. Ap. VI, R. 901(A).</p>
<p>Testimonio Pericial/Expert Testimony:</p>	<p>Bajo la Regla de Evidencia 702 de Puerto Rico, se considera tanto el criterio de aceptabilidad general de <i>Frye</i> como el criterio de confiabilidad de <i>Daubert</i>. <i>Rodriguez Diaz v. Felix Gomez</i>, No. GPE2011-0104, 2016 WL 1298042, at *2 (P.R. Cir. Feb. 24, 2016).</p>
	<p>Under Puerto Rico Rule of Evidence 702, both the general acceptability criterion of <i>Frye</i> and the reliability criterion of <i>Daubert</i> are considered. <i>Rodriguez Diaz v. Felix Gomez</i>, No. GPE2011-0104, 2016 WL 1298042, at *2 (P.R. Cir. Feb. 24, 2016).</p>

*The Commonwealth of Puerto Rico is an unincorporated territory of the United States.

Rhode Island		
Ongoing Projects:		
Federal Project(s) Operating in the State:	The American Woodcock Singing-ground Survey is a multi-state survey conducted by the U.S. Fish and Wildlife Service that counts male American woodcocks on designated routes along the east coast. <i>See American Woodcock Singing-ground Survey</i> , CITIZENSCIENCE.GOV, https://www.citizenscience.gov/catalog/182/# (last visited Feb. 7, 2019); <i>see also American Woodcock</i> , U.S. FISH & WILDLIFE SERV., https://www.fws.gov/birds/surveys-and-data/webless-migratory-game-birds/american-woodcock.php (last visited Feb. 7, 2019).	
State Project(s):	<p>The University of Rhode Island coordinates a volunteer-based lake monitoring program as part of the Watershed Watch Program (“URI-WW”), which is funded by the Rhode Island Department of Environmental Management (“RIDEM”). <i>See Lake, Pond and Reservoir Monitoring</i>, R.I. DEP’T OF ENVTL. MGMT., http://www.dem.ri.gov/programs/water/quality/surface-water/lake-monitoring.php (last visited Feb. 7, 2019). This program is the primary source of water quality data on lakes and ponds in Rhode Island. <i>See id.</i></p> <p>RIDEM’s Division of Fish and Wildlife also conducts volunteer wildlife surveys, such as the Wildlife Turkey Brood Sighting Survey. <i>See DEM Encourages Citizen Scientists To Report Sightings Of Wild Turkey Broods</i>, RI.GOV (June 11, 2018), https://www.ri.gov/press/view/33434.</p>	
Collection of Information:		
Scientific Collection Permit:	“A valid and current scientific collector’s permit issued by [RIDEM’s Division of Fish & Wildlife] is required to take, handle, or possess, for scientific, educational, management, or cultivation projects, studies or purposes, any species of mammal, bird, fish, reptile, amphibian, insect, aquatic organisms, or other animal, during seasons not permitted by regulations governing holders of a valid hunting, fishing, or trapping license or other permit or license issued by the Department.” 250 R.I. Admin. Code 60-00-4.6(B); <i>see also</i> R.I. Admin. Code 25-8-32:1.24(L).	
Trespass Laws:		
Criminal Liability for Trespass Despite Lack of Notice:	No. One entering upon the property of another must have “been forbidden to do so by the owner” to be guilty of criminal trespass. R.I. Gen. Laws § 11-44-26(a).	
Drone Laws:		
Preemption:	“Subject to federal law, the state of Rhode Island and the Rhode Island Airport Corporation shall have exclusive legal authority to regulate any object capable of flying that is remotely controlled and flies autonomously through software-controlled flight plans embedded in the object’s system by a global-position system, commonly known as unpiloted aerial vehicles, remotely piloted aircraft, drones, or unmanned aircraft systems.” R.I. Gen. Laws § 1-8-1.	

State Parks:	“Engine powered model airplanes, unmanned aircraft systems, model boats, rockets and model cars shall be operated on, over or from a Public Reservation only upon receipt of official written permission. Unmanned aircraft systems shall not be used to harass or disturb users, wildlife, or any natural resource at a Public Reservation.” R.I. Admin. Code 25-8-32:1.9(C).
Stalking Laws:	
Criminal Law:	“Any person who: (1) harasses another person; or (2) willfully, maliciously, and repeatedly follows another person with the intent to place that person in reasonable fear of bodily injury, is guilty of the crime of stalking.” R.I. Gen. Laws § 11-59-2(a).
Civil Law:	“Any person who suffers harm pursuant to [R.I. Gen. Laws § 11-59-2] may recover his or her damages in a civil action against the offender.” R.I. Gen. Laws § 9-1-2.1(a).
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	In 2004, the R.I. Legislature created the Rhode Island Environmental Monitoring Collaborative “for the purposes of organizing, coordinating, maintaining and supporting the environmental monitoring systems within [the state].” R.I. Gen. Laws § 46-23.2-5. It consists of 10 unpaid members, who sit ex officio from various governmental and educational organizations (<i>e.g.</i> , RIDEM and University of Rhode Island Graduate School of Oceanography), <i>id.</i> , one of which, University of Rhode Island Watershed Watch, is a dedicated citizen science organization. <i>See URI Watershed Watch</i> , U. OF R.I., http://web.uri.edu/watershedwatch/ (last visited Feb. 7, 2019). The Collaborative “shall work with other organizations and agencies that monitor . . . watersheds to perform [its duties].” R.I. Gen. Laws § 46-23.2-5.
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim “is well grounded in fact.” R.I. Super. R. Civ. P. 11.
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” R.I. R. Evid. 901(a).
Expert Testimony:	Rhode Island Rule of Evidence 702 and <i>Daubert</i> standard. <i>See Mills v. State Sales, Inc.</i> , 824 A.2d 461, 470 (R.I. 2003); <i>In re Odell</i> , 672 A.2d 457, 459 (R.I. 1996).

South Carolina



Ongoing Projects:

State Project(s):	<p>The South Carolina Department of Health and Environmental Control’s (“DHEC”) Adopt-A-Stream Program uses volunteers to monitor the physical and chemical properties of streams, and survey bacteria and macro-invertebrate populations. <i>See Adopt-A-Stream Program</i>, S.C. DEP’T OF HEALTH & ENVTL. CONTROL, https://www.scdhec.gov/environment/your-water-coast/adopt-stream-program (last visited Feb. 7, 2019). This data is used to assess the health of the streams. <i>See id.</i></p> <p>The South Carolina Department of Natural Resources manages and provides links for multiple wildlife observation citizen science projects within the state, including, but not limited to SC Bat Watch!. <i>See Citizen Science Opportunities</i>, S.C. DEP’T OF NAT. RESOURCES, http://www.dnr.sc.gov/volunteering/index.html (last visited Feb. 7, 2019).</p>
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Collection of Information:

Ag-Gag Law:	<p>“Without the effective consent of the owner, and with the intent to disrupt or damage the enterprise conducted at the animal facility, it is unlawful for a person to:</p> <ol style="list-style-type: none"> (1) enter an animal facility, not then open to the public, with intent to commit an act prohibited by this section; (2) remain concealed, with intent to commit an act prohibited by this section, in an animal facility; or (3) enter an animal facility and commit or attempt to commit an act prohibited by this section.” S.C. Code Ann. § 47-21-50. <p>A violation of this section is a misdemeanor and punishable by a maximum fine of \$10,000 and/or imprisonment not to exceed 3 years. <i>Id.</i> § 47-21-80(A).</p>
Scientific Collection Permit:	<p>A scientific collection permit is required for individuals and institutions to conduct scientific studies that may take or otherwise disturb protected wildlife. See S.C. Code Ann. § 50-11-1180.</p> <p>Operating in violation of this section is a misdemeanor punishable by a maximum fine of \$100 or imprisonment not to exceed 30 days and any permit issued to the violator will be revoked. <i>See id.</i></p>

Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice:	No. “Notice . . . prohibiting . . . entry” is a necessary element of criminal trespass, and it may be provided by posting notice in four places around the perimeter of the property. S.C. Code Ann. § 16-11-600.
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”

Stalking Laws:	
Stalking:	<p>“‘Stalking’ means a pattern of words, whether verbal, written, or electronic, or a pattern of conduct that serves no legitimate purpose and is intended to cause and does cause a targeted person and would cause a reasonable person in the targeted person’s position to fear: ... (6) damage to the property of the person or a member of his family.” S.C. Code Ann. § 16-3-1700(C).</p>
Use of Information:	
Our research has not found any provisions relating to the use of information collected by citizens in enforcement or administrative/legislative actions.	
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “there is good ground to support” the claim. S.C. R. Civ. P. 11(a).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” S.C. R. Evid. 901(a).
Expert Testimony:	South Carolina Rule of Evidence 702 and <i>Jones</i> standard to determine reliability; <i>Daubert</i> standard is instructive. See <i>State v. Council</i> , 515 S.E.2d 508, 517-18 (S.C. 1999); <i>State v. Jones</i> , 259 S.E.2d 120, 124 (S.C. 1979).

South Dakota



Ongoing Projects:

State Project(s):	<p>The South Dakota Department of Environment and Natural Resources (“DENR”) partners with the East Dakota Water Development District and the South Dakota Discovery Center to support volunteer water quality sampling efforts. <i>See Watershed Protection - Volunteer Watershed Activities</i>, S.D. DEP’T OF ENVIRONMENT & NAT. RESOURCES, https://denr.sd.gov/dfta/wp/voluntary.aspx (last visited Feb. 7, 2019).</p> <p>South Dakota Game, Fish and Parks manages volunteer surveys for Osprey and Peregrine falcons. <i>See Conservation Matters</i>, S.D. GAME, FISH & PARKS, https://gfp.sd.gov/conservation/ (last visited Feb. 7, 2019).</p>
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Collection of Information:

Ag-Gag Law:	<p>“No person, without consent, may:</p> <ul style="list-style-type: none"> (1) Intentionally damage or destroy an animal facility, an animal, or property in or on the animal facility, or obstruct any enterprise conducted at the animal facility; . . . (3) Enter an animal facility, not then open to the public, with intent to commit any act prohibited by this section; (4) Enter an animal facility and remain concealed, with intent to commit any act prohibited by this section; (5) Enter an animal facility and commit or attempt to commit any act prohibited by this section.” S.D. Codified Laws § 40-38-2. <p>“No person may, without consent, and with the intent to obstruct the enterprise conducted at the animal facility, enter or remain on an animal facility, <i>if the person had notice</i> that the entry was forbidden or received notice to depart but failed to do so.” <i>Id.</i> § 40-38-3 (emphasis added).</p> <p>Private parties can recover treble damages in a civil suit. <i>Id.</i> § 40-38-5.</p>
Scientific Collection Permit:	<p>“A person or institution must apply for a scientific collector’s license on forms provided by the [Department of Game, Fish and Parks]. The form must contain complete information on the species and numbers of nests, eggs, and wild animals, including any part thereof, requested to be collected, the method of collection, the locations of collection, the collection period, what the purpose or use of the collected specimens will be, the institution for which collections are being made, and final disposition of the specimens collected.” S.D. Admin. R. 41:09:16:02.</p>

Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	No. In order for entry upon property to constitute criminal trespass, “notice against trespass [must be] given by: [a]ctual communication . . . [p]osting . . . or . . . fencing.” S.D. Codified Laws § 22-35-6.
Other Provisions:	<i>See supra</i> “Ag-Gag Law.”
Drone Laws:	
Surveillance Law:	Any person who “intentionally uses a drone to photograph, record, or otherwise observe another person in a private place. . . or lands a drone on the lands or waters of another resident . . . without the owner’s consent...is guilty of a Class 1 misdemeanor ²²⁰ .” S.D. Codified Laws § 22-21-1.
Exceptions:	The above section does not apply to “law enforcement officers, or to those acting under the direction of a law enforcement officer, while engaged in the performance of the officer’s lawful duties... [,] a drone operator operating a drone for commercial or agricultural purposes pursuant to or in compliance with federal aviation administration regulations, authorizations, . . . [or] an emergency management worker operating a drone within the scope of the worker’s duties.” S.D. Codified Laws § 22-21-1.
State Parks:	In order to fly in state parks drones must: (1) be registered with the Federal Aviation Administration; (2) fly within visual line of sight; (3) fly below 400 feet; (4) fly only during daylight; (5) not be used to eavesdrop or engage in any other type of surveillance in a private place; (6) not be used to harass game birds or wild animals (<i>e.g.</i> , bison); (7) not fly in a manner that causes serious public inconvenience, annoyance, or alarm to any other person, makes unreasonable noise; (8) not disturb any lawful assembly or meeting of persons, or obstruct vehicular or pedestrian traffic; and (9) not fly in a manner which interferes with the management of the area or the authorized use of the area by others. <i>See Drone Use On or Above South Dakota State Park Lands</i> , S.D. GAME, FISH AND PARKS, https://gfp.sd.gov/camping-regulations/ (last visited Feb. 7, 2019).
Stalking Laws:	
Criminal Law:	<p>“No person may:</p> <ul style="list-style-type: none"> (1) Willfully, maliciously, and repeatedly follow or harass another person; (2) Make a credible threat to another person with the intent to place that person in reasonable fear of death or great bodily injury; or (3) Willfully, maliciously, and repeatedly harass another person by means of any verbal, electronic, digital media, mechanical, telegraphic, or written communication. <p>A violation of this section constitutes the crime of stalking.” S.D. Codified Laws § 22-19A-1.</p>

²²⁰ A Class 1 misdemeanor is punishable by a maximum fine of \$2,000 and/or imprisonment not to exceed 1 year. S.D. Codified Laws § 22-6-2(1).

Civil Law:	“In addition to the criminal penalty provided in § 22-19B-1, there is a civil cause of action for malicious harassment. The victim of malicious harassment may recover both special and general damages, including damages for emotional distress, reasonable attorney fees and costs, and punitive damages. The civil cause of action for malicious harassment is in addition to any other remedies, criminal or civil, otherwise available under law.” S.D. Codified Laws § 20-9-32.
Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Allows:	“Notwithstanding any other provision, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of a [n air pollution control] plan.” S.D. Admin. R. 74:36:13:07.
Prohibitive by Effect:	“Credible evidence is as follows: . . . (2) The following testing, monitoring, or information gathering methods are presumptively credible testing, monitoring, or information-gathering methods; (a) Any federally enforceable monitoring or testing methods, including those in 40 C.F.R. Pts. 51, 60, 61, and 75 . . . ; (b) Other testing, monitoring or information-gathering methods that produce information comparable to that produced by any method in [this section].” S.D. Admin. Rule 74:36:13:07.
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “[t]he allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” S.D. Codified Laws § 15-6-11(b)(3).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” S.D. Codified Laws § 19-19-901(a).
Expert Testimony:	Section 19–19–702 and <i>Daubert</i> standard. See <i>Burley v. Kyttec Innovative Sports Equip., Inc.</i> , 737 N.W.2d 397, 402-03 (S.D. 2007); <i>State v. Hofer</i> , 512 N.W.2d 482, 484 (S.D. 1994).

Tennessee



Ongoing Projects:

Federal Project(s) Operating in the State: The National Park Service (“NPS”) is launching a volunteer-based citizen science water monitoring project in the Obed watershed. *See Volunteers Wanted: Obed WSR to Host Citizen Science Water Monitoring Project*, NAT’L PARK SERV., <https://www.nps.gov/obed/learn/news/volunteers-wanted-to-host-citizen-science-water-monitoring-project.htm> (last visited Feb. 7, 2019). NPS is seeking volunteers to assist park staff in collecting water samples in the park and to process and analyze water samples. *See id.* The pilot project will focus on collection of E. coli bacteria samples. *See id.*

NPS hosts a variety of citizen science projects in and surrounding Great Smoky Mountain National Park:

- Project Budhurst is an initiative designed to assist NPS in collecting data on target species of high and/or low elevation trees in the Great Smoky Mountains. *See Citizen Science*, NAT’L PARK SERV., <https://www.nps.gov/grsm/learn/nature/dff11-citizenscience.htm> (last visited Feb. 7, 2019).
- Visitors to the park can also volunteer to monitor otter populations on iNaturalist under the [Otter Spotter](#) program. *Id.*
- Great Smoky Mountain National Park further hosts a [Picture Post](#) project at the Campbell Overlook on Highway 441. *Id.* Visitors can upload photographs to the Picture Post website, which enables the park to track how the area has recovered from a November 2016 fire. *Id.*

State Project(s): Tennessee’s Department of Environment & Conservation enables citizens to submit complaints about water quality violations to the department by completing an online form, by calling their toll-free phone number at (888) 891-8332, or by submitting letters by mail. *See Citizen Water Quality Complaints*, TENN. DEP’T OF ENV’T & CONSERVATION, <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/citizen-water-quality-complaints.html> (last visited Feb. 7, 2019).

The Tennessee Amphibian Monitoring Program (“TAMP”) is a joint venture between the Tennessee Wildlife Resources Agency and the Middle Tennessee State University Center for Environmental Education. *See Tennessee Amphibian Monitoring Program*, MIDDLE TENN. STATE U., <http://www.mtsu.edu/mtsucee/ta mp.php> (last visited Feb. 7, 2019). TAMP volunteers drive routes across Tennessee and monitor sounds at ten listening stations on each route. *Id.*

Collection of Information:

Ag-Gag Law: “A person commits an offense if, without the consent of the owner, the person ... enters or remains on an animal facility with the intent to disrupt or damage the enterprise conducted at the animal facility, and the person:
(A) Had notice that the entry was forbidden;

	<p>(B) Knew or should have known that the animal facility was or had closed to the public; or (C) Received notice to depart but failed to do so.” Tenn. Code Ann. § 39-14-803(c)(1).</p> <p>“For purposes of this subsection (c), ‘notice’ means: (A) Oral or written communication by the owner or someone with actual or apparent authority to act for the owner; (B) The presence of fencing or other type of enclosure or barrier designed to exclude intruders or to contain animals; or (C) A sign or signs posted on the property or at the entrance to the building, reasonably likely to come to the attention of intruders, indicating that entry is forbidden.” Id. § 39-14-803(c)(2).</p> <p>A violation of this section constitutes a Class B misdemeanor.²²¹ Id. § 39-14-804(b).</p>
Scientific Research and Collecting Permit:	<p>Any person or institution “wishing to collect biological or geological materials, or air or water samples, or install research equipment on State Park or Designated State Natural Area land must obtain a scientific research and collecting permit from the Resource Management Division.” <i>Tennessee State Parks Scientific Research and Collecting Permit</i>, TENN. DEP’T OF ENV’T & CONSERVATION, https://www.tn.gov/environment/permit-permits/permit-natural-resources/tennessee-state-parks-scientific-research-and-collecting-permit.html (last visited Feb. 7, 2019); <i>see also</i> Tenn. Comp. R. & Regs. 0400-02-02-.23.</p>
Other Provisions:	<p><i>See infra</i> “Drone Laws.”</p>
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>Yes, unless the statutory defense to prosecution applies. “A person commits criminal trespass if the person enters or remains on property, or any portion of property, without consent of the owner.” Tenn. Code Ann. § 39-14-405(a). Consent is inferred “in the case of property that is used for commercial activity available to the general public” or “when the owner has communicated [her] intent that the property be open to the general public.” <i>Id.</i></p> <p>Criminal trespass is a Class C misdemeanor.²²² <i>Id.</i> § 39-14-405(g).</p>
Defense to Prosecution of Trespass:	<p>“It is a defense to prosecution under this section that: (1) A person entered or remained on property that the person reasonably believed to be property for which the owner’s consent to enter had been granted; (2) The person’s conduct did not substantially interfere with the owner’s use of the property; and (3) The person immediately left the property upon request.” Tenn. Code Ann. § 39-14-405(b).</p>

²²¹ A Class B misdemeanor is punishable by “not greater than six (6) months or a fine not to exceed five hundred dollars (\$500), or both, unless otherwise provided by statute.” Tenn. Code Ann. § 40-35-111(e)(2).

²²² A Class C misdemeanor is punishable by “not greater than thirty (30) days or a fine not to exceed fifty dollars (\$50.00), or both, unless otherwise provided by statute.” Tenn. Code Ann. § 40-35-111(e)(3).

	This defense is not applicable when the property owner posted signs or placed identifying purple paint marks on trees that “are reasonably likely to come to the attention of a person entering the property.” <i>Id.</i> § 39-14-405(c).
Other Provisions:	<i>See infra</i> “Drone Laws.”
Drone Laws:	
Surveillance & Critical Infrastructure Law:	<p>“(a) Subject to the exceptions set forth in § 39-13-902(a), a person commits an offense if the person:</p> <p>(1) Uses an unmanned aircraft to capture an image of an individual or privately owned real property in this state with the intent to conduct surveillance on the individual or property captured in the image . . .</p> <p>(6)(A) Without the business operator’s written consent, knowingly uses an unmanned aircraft within two hundred fifty feet (250’) of the perimeter of any critical infrastructure facility for the purpose of conducting surveillance of, gathering evidence or collecting information about, or photographically or electronically recording, critical infrastructure data. . . .” Tenn. Code Ann. § 39-13-903.</p> <p>“Critical infrastructure facility” includes, but is not limited to, facilities that manufacture, store, process, treat, or transmit chemicals, oil, gas, electricity, and water. <i>Id.</i> § 39-13-903(6)(B).</p> <p>An offense under this section is a Class C misdemeanor. <i>Id.</i> § 39-13-903(b).</p>
Exception:	<p>“(a) Notwithstanding § 39-13-903, it is lawful to capture an image using an unmanned aircraft in this state . . .</p> <p>(1) For purposes of professional or scholarly research and development by a person acting on behalf of an institution of higher education . . . , including a person who:</p> <p>(A) Is a professor, employee, or student of the institution; or</p> <p>(B) Is under contract with or otherwise acting under the direction or on behalf of the institution; . . .</p> <p>(4) If the image is captured for the purposes of mapping . . .</p> <p>(9) If the image is captured by state or local law enforcement authorities, or a person who is under contract with or otherwise acting under the direction or on behalf of state authorities, for the purpose of:</p> <p>(A) Surveying the scene of a catastrophe or other damage to determine whether a state of emergency should be declared;</p> <p>(B) Preserving public safety, protecting property, or surveying damage or contamination during a lawfully declared state of emergency; or</p> <p>(C) Conducting routine air quality sampling and monitoring, as provided by state or local law;</p> <p>(10) At the scene of a spill, or a suspected spill, of hazardous materials; . . .</p> <p>(16) In connection with oil and gas pipeline and well safety and protection.” Tenn. Code Ann. § 39-13-902.</p>

Trespass Law As Applied to Drone Activity:	“(a) A person commits criminal trespass if the person enters or remains on property, or any portion of property, without the consent of the owner. . . . (d) For purposes of this section, ‘enter’ means intrusion of the entire body or when a person causes an unmanned aircraft to enter that portion of the airspace above the owner’s land not regulated as navigable airspace by the federal aviation administration. . . . (g) Criminal trespass is a Class C misdemeanor.” Tenn. Code Ann. § 39-14-405.
State Parks:	“The operation or use of aircraft on lands or waters other than at the landing areas designated in special regulations is prohibited [in state parks].” Tenn. Comp. R. & Regs. 0400-02-02-.02(1). Flight is only allowed with written approval from the park manager. <i>See Drone/UAV, Policies</i> , TENN. STATE PARKS, https://tnstateparks.com/about/policies (last visited Feb. 7, 2019).
Critical Infrastructure Laws:	
Drone Law:	<i>See supra</i> “Drone Laws.”
Stalking Laws:	
Criminal Law:	“A person commits an offense who intentionally engages in stalking.” Tenn. Code Ann. § 39-17-315(b)(1). “‘Stalking’ means a willful course of conduct involving repeated or continuing harassment of another individual that would cause a reasonable person to feel terrorized, frightened, intimidated, threatened, harassed, or molested, and that actually causes the victim to feel terrorized, frightened, intimidated, threatened, harassed, or molested.” <i>Id.</i> § 39-17-315(a)(4).
Civil Law:	“(a) There is hereby created a civil cause of action for malicious harassment. (b) A person may be liable to the victim of malicious harassment for both special and general damages, including, but not limited to, damages for emotional distress, reasonable attorney’s fees and costs, and punitive damages.” Tenn. Code Ann. § 4-21-701.
Use of Information:	
Although our research is incomplete, this provision could be construed to prohibit the use of information collected by citizens.	
Explicitly Prohibits:	“[A]n image captured in violation of § 39-13-903, or an image captured by an unmanned aircraft that was incidental to the lawful capturing of an image... [m]ay not be used as evidence in any criminal or juvenile proceeding, civil action, or administrative proceeding.” Tenn. Code Ann. § 39-13-905(a)(1).
Evidentiary Standard:	
Pleading a Claim:	Requires certification that “the allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Tenn. R. Civ. P. 11.02(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to the court to support a finding by the trier of fact that the matter in question is what its proponent claims.” Tenn. R. Evid. 901(a).

Expert Testimony:	Tennessee courts follow the non-exhaustive list of factors identified in <i>McDaniel</i> and later expanded on in <i>Stevens</i> when considering expert testimony under Tennessee Rule of Evidence 702. <i>See Brown v. Crown Equip. Corp.</i> , 181 S.W.3d 268, 273 (Tenn. 2005); <i>State v. Stevens</i> , 78 S.W.3d 817, 832-35 (Tenn. 2002); <i>McDaniel v. CSX Transp., Inc.</i> , 955 S.W.2d 257, 265 (Tenn. 1997) (“Although we do not expressly adopt <i>Daubert</i> , the non-exclusive list of factors to determine reliability are useful in applying our Rules 702 and 703.”).
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Texas



Ongoing Projects:

Federal Project(s) Operating in the State: The U.S. Geological Survey’s National Wetlands Research Center is seeking volunteers in Southeast Texas to help study the effects of carbon dioxide on baldcypress swamps. *See North American Baldcypress Swamp Volunteer Network*, U.S. GEOLOGICAL SURV. NAT’L WETLANDS RES. CTR., <https://www.nwrc.usgs.gov/special/bald-cypress/index.htm> (last visited Feb. 7, 2019). Volunteers help collect samples and photograph the research sites. *Id.* The project is specifically seeking volunteers from Fort Bend County. *Id.*

Texas Stream Team is a collaboration of the Meadows Center for Water and the Environment at Texas State University, the Texas Commission on Environmental Quality (“TCEQ”), and the U.S. Environmental Protection Agency (“EPA”) in an on-going statewide program of citizen water quality monitoring and outreach. *See Statewide: Texas Stream Team - Volunteers Monitoring Water Quality*, TEX. COMMISSION ON ENVTL. QUALITY, <https://www.tceq.texas.gov/waterquality/nonpoint-source/projects/texas-stream-team> (last visited Feb. 7, 2019). “This citizen scientist program increases public knowledge of water quality issues through trained volunteers who conduct water quality monitoring on their local lakes, rivers, streams, and estuaries across the state.” *Id.*

State Project(s): Texas Parks and Wildlife manages multiple wildlife observation citizen science projects through Texas Nature Trackers (“TNT”), part of the Wildlife Diversity Program. *See Texas Nature Trackers*, TEX. PARKS & WILDLIFE, https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/ (last visited Feb. 7, 2019). This program tracks the status of wild populations of plants and animals throughout Texas, such as [Herps](#), [Terrestrial Mollusks](#), [Mammals](#), [Birds](#), [Freshwater Mussels](#), [Red Crowned Parrot](#), [Bees and Wasps](#), and more. *See Texas Nature Trackers Projects*, TEX. PARKS & WILDLIFE, https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/projects/ (last visited Feb. 7, 2019).

Collection of Information:

Research Permit: A Scientific Permit for Research is required to collect, take, or salvage wildlife for scientific purposes. *See Tex. Parks & Wild. Code Ann. § 43.022(e); Wildlife Diversity Permits: Scientific Permit for Research*, TEX. PARKS & WILDLIFE DEP’T, <https://tpwd.texas.gov/business/permits/land/wildlife/research/> (last visited Feb. 7, 2019).

Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice: No. In order to commit criminal trespass, a person must have “had notice that the entry was forbidden” or have “received notice to depart but failed to do so.” Tex. Penal Code § 30.05(a).

Trespass on Agricultural Land:	Trespass is a Class C misdemeanor ²²³ if committed “on agricultural land and within 100 feet of the boundary of the land” or “on residential land and within 100 feet of a protected freshwater area.” Tex. Penal Code § 30.05(d)(1)-(2).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
Surveillance Law:	<p>“(a) A person commits an offense if the person uses an unmanned aircraft to capture an image of an individual or privately owned real property in this state with the intent to conduct surveillance on the individual or property captured in the image.</p> <p>(b) An offense under this section is a Class C misdemeanor.” Tex. Gov’t Code § 423.003.</p>
Exceptions:	<p>“It is a defense to prosecution under this section that the person destroyed the image:</p> <ol style="list-style-type: none"> (1) as soon as the person had knowledge that the image was captured in violation of this section; and (2) without disclosing, displaying, or distributing the image to a third party.” Tex. Gov’t Code § 423.003(c). <p>“It is lawful to capture an image using an unmanned aircraft in this state:</p> <ol style="list-style-type: none"> (1) for the purpose of professional or scholarly research and development or for another academic purpose by a person acting on behalf of an institution of higher education or a private or independent institution of higher education, as those terms are defined by Section 61.003, Education Code, including a person who: <ol style="list-style-type: none"> (A) is a professor, employee, or student of the institution; or (B) is under contract with or otherwise acting under the direction or on behalf of the institution.” <i>Id.</i> § 423.002(a).
State Parks:	“Two parks offer zones for flying remote controlled aircraft (including drones): Lake Whitney and San Angelo .” <i>Frequently Asked Questions</i> , TEX. PARKS & WILDLIFE, https://tpwd.texas.gov/state-parks/park-information/frequently-asked-questions (last visited Feb. 7, 2019).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Critical Infrastructure Laws:	
Trespass:	<p>Trespass against a “critical infrastructure facility” or a superfund site is a Class A misdemeanor²²⁴. Tex. Penal Code § 30.05(d)(3).</p> <p>“Critical infrastructure facility” is defined as including “a chemical manufacturing facility; . . . a refinery; . . . an electric power generation facility . . . or distribution facility; a water intake structure, water treatment facility, wastewater treatment plant, or pump station; . . . a natural gas transmission</p>

²²³ A Class C misdemeanor carries a maximum \$500 fine. Tex. Penal Code § 12.23.

²²⁴ A Class A misdemeanor carries a maximum one-year sentence and/or maximum \$4,000 fine. Tex. Penal Code § 12.21.

	compressor station; . . . a liquid natural gas terminal or storage facility; . . . a . . . freight transportation facility; . . . [or] a gas processing plant, including a plant used in the processing, treatment, or fractionation of natural gas[.]” <i>Id.</i> § 30.05(b)(7).
Drone Law:	<p>“A person commits an offense if the person intentionally or knowingly:</p> <p>(1) operates an unmanned aircraft over a . . .critical infrastructure facility and the unmanned aircraft is not higher than 400 feet above ground level;</p> <p>(2) allows an unmanned aircraft to make contact with a . . .critical infrastructure facility, including any person or object on the premises of or within the facility; or</p> <p>(3) allows an unmanned aircraft to come within a distance of a . . . critical infrastructure facility that is close enough to interfere with the operations of or cause a disturbance to the facility.” Tex. Gov’t Code § 423.0045(b).</p> <p>“Critical infrastructure facility” includes, but is not limited to, facilities that manufacture, store, process, treat, or transmit chemicals, oil, gas, electricity, and water “if completely enclosed by a fence or other physical barrier that is obviously designed to exclude intruders, or if clearly marked with a sign or signs that are posted on the property, are reasonably likely to come to the attention of intruders, and indicate that entry is forbidden:”; or “any portion of an aboveground oil, gas, or chemical pipeline” if “enclosed by a fence or other physical barrier obviously designed to exclude intruders.” <i>Id.</i> § 423.0045(a)(1-a).</p> <p>“An offense under this section is a Class B misdemeanor²²⁵.” <i>Id.</i> § 423.0045(d).</p>
Exceptions for Drone Law:	<i>See supra</i> “Drone Laws.”
Stalking Laws:	
Criminal Law:	“A person commits an offense [of stalking] if the person, on more than one occasion and pursuant to the same scheme or course of conduct that is directed specifically at another person, knowingly engages in conduct that . . . would cause a reasonable person to . . . fear that an offense will be committed against the person’s property; or . . . feel harassed, annoyed, alarmed, abused, tormented, embarrassed, or offended.” Tex. Penal Code § 42.072(a)(3)(C)&(D).
Civil Law:	“A defendant is liable, as provided by this chapter, to a claimant for damages arising from stalking of the claimant by the defendant.” Tex. Civ. Prac. & Rem. Code § 85.002.
Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Allows:	TCEQ may use “information provided by [a] private individual” if the executive

²²⁵ A Class B misdemeanor carries a punishment of imprisonment not to exceed 180 days and/or a maximum fine of \$2,000. Tex. Penal Code § 12.22.

	director judges it to be “of sufficient value and credibility to warrant the initiation of an enforcement action.” 30 Tex. Admin. Code § 70.4(b).
Prohibitive by Effect:	“[I]f [TCEQ] relies on any physical or sampling data submitted by an individual to prove one or more elements of an enforcement case, such data must have been collected or gathered in accordance with relevant agency protocols. The individual submitting the physical or sampling data must be willing to submit a sworn affidavit demonstrating that the individual followed relevant agency protocols when collecting the data.” 30 Tex. Admin. Code § 70.4(c)(3).
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim “is not groundless.” Tex. R. Civ. P. 13.
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Tex. R. Evid. 901(a).
Expert Testimony:	Texas Rule of Evidence 702 and <i>Daubert</i> standard is instructive for expert testimony based on scientific evidence. See <i>E.I. du Pont de Nemours & Co. v. Robinson</i> , 923 S.W.2d 549, 555–57 (Tex. 1995).

Utah



Ongoing Projects:

Federal Project(s) Operating in the State: The U.S. Geological Survey (“USGS”), along with other non-federal entities, sponsors a citizen science project called CrowdHydrology. *See CrowdHydrology*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/129/#> (last visited Feb. 7, 2019). CrowdHydrology gathers information on stream stage or water levels from anyone willing to send a text message of water levels at their local stream to collect spatially distributed hydrologic data. *See How It Works*, CROWDHYDROLOGY, <http://www.crowdhydrology.com/about/how-it-works/> (last visited Feb. 7, 2019). This project is ongoing in Utah. *See Locations, Utah*, CROWDHYDROLOGY, <http://www.crowdhydrology.com/location/utah/> (last visited Feb. 7, 2019).

State Project(s): Utah Water Watch (“UWW”), a partnership between Utah State University Water Quality Extension and the Utah Department of Environmental Quality’s (“DEQ”) Division of Water Quality, creates opportunities for the public to assist in monitoring Utah’s lakes and streams. *See Utah Water Watch*, THE CORNELL LAB OF ORNITHOLOGY, <http://www.birds.cornell.edu/citscitoolkit/utah-water-watch/> (last visited Feb. 7, 2019). As part of UWW, volunteers of all ages monitor water quality once a month and report back the data to watershed managers. *See id.*; *see also Utah Water Watch*, EXTENSION UTAH STATE U., <https://extension.usu.edu/utahwaterwatch/> (last visited Feb. 7, 2019).

DEQ developed the bloomWatch mobile app, a phone application where users can upload the location and photos of harmful algal blooms (“HABs”) to water quality managers and public health officials. Jared Mendenhall, *Keeping Tabs on HABs*, UTAH DEP’T OF ENVTL. QUALITY, <https://deq.utah.gov/communication/news/keeping-tabs-on-habs> (last updated Nov. 21, 2018). “The app effectively harnesses crowd-sourced data to track and manage water resources that the public depends on for potable water and recreation.” *Id.*

DEQ also welcomes citizen science aerial monitoring of waterbodies at risk of developing HABs. *See id.* DEQ will outfit small fixed-wing aircraft with geospatial cameras to collect aerial imagery that “can be quickly processed to detect high concentrations of cyanobacteria at a much quicker speed and better resolution than satellite imagery.” *Id.*

Collection of Information:

Ag-Gag Law: Utah’s former Ag-Gag law, Utah Code Ann. § 76-6-112, was declared unconstitutional by a federal judge on July 7, 2017. *See Animal Legal Def. Fund v. Herbert*, 263 F. Supp. 3d 1193 (D. Utah 2017).

Trespass Laws:	
Criminal Liability for In-Person and Drone Trespass:	<p>“A person is guilty of criminal trespass if . . .</p> <ul style="list-style-type: none"> (a) the person enters or remains unlawfully on or causes an unmanned aircraft to enter and remain unlawfully over property and . . . (iii) is reckless as to whether the person’s or unmanned aircraft’s presence will cause fear for the safety of another; (b) knowing the person’s or unmanned aircraft’s entry or presence is unlawful, the person enters or remains on or causes an unmanned aircraft to enter or remain unlawfully over property to which notice against entering is given by: <ul style="list-style-type: none"> (i) personal communication to the person by the owner or someone with apparent authority to act for the owner; (ii) fencing or other enclosure obviously designed to exclude intruders; (iii) posting of signs reasonably likely to come to the attention of intruders” Utah Code Ann. § 76-6-206(2). <p>A violation of Subsection 2(a) or (b) is a Class B misdemeanor.²²⁶ <i>Id.</i> § 76-6-206(3)(a).</p>
Trespass on Agricultural Land:	<p>“A person is guilty of the class B misdemeanor criminal offense of criminal trespass on agricultural or range land and is liable for the civil damages under Subsection (5) if, under circumstances not amounting to a greater offense, and without authorization or a right under state law, the person enters or remains on agricultural or range land regarding which notice prohibiting entry is given by:</p> <ul style="list-style-type: none"> (a) personal communication to the person by the owner of the land, an employee of the owner, or a person with apparent authority to act for the owner; (b) fencing or other form of enclosure a reasonable person would recognize as intended to exclude intruders; or (c) posted signs or markers that would reasonably be expected to be seen by persons in the area of the borders of the land.” Utah Code Ann. § 76-6-206.3(2).
Drone Laws:	
Wildland Fire Drone Law:	<p>“A person may not operate an unmanned aircraft system in a manner that causes an unmanned aircraft to fly within an area that is under a temporary flight restriction that is issued by the Federal Aviation Administration as a result of the wildland fire, or an area designated as a wildland fire scene on a system managed by a federal, state, or local government entity that disseminates emergency information to the public, unless the person operates the unmanned aircraft system with the permission of, an in accordance with the restrictions established by, the incident commander.” Utah Code Ann. § 65A-3-2.5(2).</p>

²²⁶ A Class B misdemeanor is punishable by “a term not exceeding six months,” Utah Code Ann. § 76-3-204(2), and a fine not exceeding \$1,000, *id.* § 76-3-301(1)(d).

	A violation of this subsection is generally a Class B misdemeanor, but can be a Class A misdemeanor ²²⁷ if the unmanned aircraft interferes with other aircrafts attempting to control or contain a wildland fire. <i>Id.</i> § 65A-3-2.5(3).
Preemption:	“(1) A political subdivision of the state, or an entity within a political subdivision of the state, may not enact a law, ordinance, or rule governing the private use of an unmanned aircraft unless (a) authorized by this chapter; or (b) the political subdivision or entity is an airport operator.... (2) [Chapter 14] supersedes any law, ordinance, or rule enacted by a political subdivision of the state before July 1, 2017.” Utah Code Ann. § 72-14-103.
State Parks:	State parks in Utah have park-specific rules for drones. For example, Antelope Island State Park prohibits drone use March – November (not including the Davis County Causeway), and allows drone use for the remainder of the year in designated areas within the park for a fee. <i>See Drone Regulations for Antelope Island State Park</i> , UTAH DEP’T OF NAT. RESOURCES, https://stateparks.utah.gov/parks/antelope-island/drone-guidelines/ (last visited Feb. 7, 2019). For drone rules for other state parks visit stateparks.utah.gov or contact a state park representative.
Stalking Laws:	
Criminal Law:	“A person is guilty of stalking who intentionally or knowingly engages in a course of conduct directed at a specific person and knows or should know that the course of conduct would cause a reasonable person: (a) to fear for the person’s own safety or the safety of a third person; or (b) to suffer other emotional distress.” Utah Code Ann. § 76-5-106.5(2).
Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Allows:	“The Division [of Water Quality] will investigate and provide [a] written response to all citizen complaints” that a permit to discharge into state waters has been violated. Utah Admin. Code R317-8(1.9).

²²⁷ A Class A misdemeanor is punishable by “a term not exceeding one year,” Utah Code Ann. § 76-3-204(1), and a fine not exceeding \$2,500, *id.* § 76-3-301(1)(c).

<p>Explicitly Prohibits:</p>	<p>“(1) A law enforcement agency may not obtain, receive, or use data acquired through an unmanned aircraft system unless the data is obtained (c) subject to Subsection (2), from a person who is a nongovernment actor...or (e) for purposes unrelated to a criminal investigation.</p> <p>(2) A nongovernment actor may only disclose data acquired through an unmanned aircraft system to a law enforcement agency if:</p> <ul style="list-style-type: none"> (a) the data appears to pertain to the commission of a crime; or (b) the nongovernment actor believes, in good faith, that: <ul style="list-style-type: none"> (i) the data pertains to an imminent or ongoing emergency involving danger of death or serious bodily injury to an individual; and (ii) disclosing the data would assist in remedying the emergency. <p>(3) A law enforcement agency that obtains, receives, or uses data acquired under Subsection (1)(d) or (e) shall destroy the data as soon as reasonably possible after the law enforcement agency obtains, receives, or uses the data.” Utah Code Ann. § 72-14-203.</p> <hr/> <p>“(1) Except as provided in this section, a law enforcement agency:</p> <ul style="list-style-type: none"> (a) may not use, copy, or disclose data collected by an unmanned aircraft system on a person, structure, or area that is not a target; and (b) shall ensure that data described in Subsection (1)(a) is destroyed as soon as reasonably possible after the law enforcement agency collects or receives the data. <p>(2) A law enforcement agency is not required to comply with Subsection (1) if:</p> <p>...</p> <ul style="list-style-type: none"> (b) the law enforcement agency receives the data: (ii) from a person who is a nongovernment actor; (c)(i) the data was collected inadvertently; and (ii) the data appears to pertain to the commission of a crime; (d)(i) the law enforcement agency reasonably determines that the data pertains to an emergency situation; and (ii) using or disclosing the data would assist in remedying the emergency; or (e) the data was collected through the operation of an unmanned aircraft system over public lands outside of municipal boundaries.” Utah Code Ann. § 72-14-204.
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<p>Evidentiary Standards:</p>	
<p>Pleading a Claim:</p>	<p>Requires certification that “the allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Utah R. Civ. P. 11(b)(3).</p>
<p>Authentication or Chain of Custody:</p>	<p>“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” Utah R. Evid. 901(a).</p>
<p>Expert Testimony:</p>	<p>For testimony about novel science, courts impose a standard of “inherent reliability,” similar to <i>Daubert</i>. <i>State v. Rimmasch</i>, 775 P.2d 388, 396 (Utah 1989). For other kinds of testimony, Utah courts require the plaintiff to make a “threshold showing” of reliability. Utah R. Evid. 702(b)–(c); <i>see also Alder v.</i></p>

<p><i>Bayer Corp.</i>, 61 P.3d 1068, 1084 (Utah 2002) (“[W]e reaffirm our previous holdings that the <i>Rimmasch</i> test applies only to novel scientific methods and techniques. Other scientific testimony is to be evaluated under rule 702 without heightened tests of ‘inherent reliability.’”).</p>
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Vermont



Ongoing Projects:

Federal Project(s) Operating in the State: In partnership with the National Park Service (“NPS”), biologists for the Vermont Center for Ecostudies (“VCE”) have developed a monitoring protocol for songbirds and implemented the plan with help from volunteers. *See National Park Service Landbird Monitoring*, VT. CTR. FOR ECOSTUDIES, <https://vtcostudies.org/projects/forests/national-park-landbird-monitoring/> (last visited Feb. 7, 2019). VCE now oversees songbird population monitoring at eleven NPS properties across the Northeast. *See id.*

VCE is also tasked with coordinating the Breeding Bird Survey (“BBS”) across the State of Vermont. *See Vermont Breeding Bird Survey*, VT. CTR. FOR ECOSTUDIES, <https://vtcostudies.org/projects/forests/vermont-breeding-bird-survey/> (last visited Feb. 7, 2019). BBS is a cooperative effort between the U.S. Geological Survey’s Patuxent Wildlife Research Center, the Canadian Wildlife Service’s National Wildlife Research Centre, and other institutions to monitor the status of North American bird populations. *Id.* Thousands of volunteers work to collect BBS data. *Id.*

State Project(s): The Vermont Agency of Natural Resources’ Department of Environmental Conservation (“DEC”) manages the [Vermont Lay Monitoring Program](#), which equips and trains members of the public and local watershed associations to measure nutrient levels of lakes and ponds. *See Citizen Scientists: Volunteer*, VT. AGENCY OF NAT. RESOURCES, <http://anr.vermont.gov/you-environment/citizen-scientists-volunteer> (last visited Feb. 7, 2019).

Also hosted by DEC, the [Vermont Invasive Patrolers](#) program recruits volunteers to monitor water bodies in the state for new introductions of invasive species. *Id.*

The Vermont Fish & Wildlife Department hosts multiple wildlife observation surveys and reporting forms on its website, such as the [Wild Turkey Brood Survey](#). *See Citizen Reporting*, VT. FISH & WILDLIFE DEP’T, <https://vtfishandwildlife.com/get-involved/citizen-reporting> (last visited Feb. 7, 2019).

Collection of Information:

Ag-Gag Laws An Ag-Gag bill introduced in the Vermont State Legislature in 2013 did not pass. *See S.162*, 2013-2014 Sess. (Vt. 2013), <http://www.leg.state.vt.us/docs/2014/bills/Intro/S-162.pdf>.

However, Vermont’s trespass law states that “[a] person who enters a building other than a residence, whose access is normally locked, whether or not the access is actually locked, or a residence in violation of an order of any court of competent jurisdiction in this State shall be imprisoned for not more than one year or fined not more than \$500.00, or both.” 13 Vt. Stat. Ann. § 3705(c).

Scientific Collection Permit.	A properly accredited individual or institution must apply for a permit from the Vermont Fish & Wildlife Department “to collect birds, their nests and eggs, and fish and wild animals or parts thereof, for public scientific research or educational purposes.” 10 Vt. Stat. Ann. § 4152(a).
Trespass:	
Criminal Liability for Trespass	<p>“A person shall be imprisoned for not more than three months or fined not more than \$500.00, or both, if, without legal authority or the consent of the person in lawful possession, he or she enters or remains on any land or in any place as to which notice against trespass is given by:</p> <p>(A) actual communication by the person in lawful possession or his or her agent or by a law enforcement officer acting on behalf of such person or his or her agent;</p> <p>(B) signs or placards so designed and situated as to give reasonable notice; or</p> <p>(C) in the case of abandoned property²²⁸:</p> <p>(i) signs or placards . . . so designed and situated as to give reasonable notice;</p> <p>(ii) actual communication by a law enforcement officer.”</p> <p style="text-align: right;">13 Vt. Stat. Ann. § 3705(a)(1).</p>
Drone Laws:	
Law:	“Any use of drones by any person, including a law enforcement agency, shall comply with all applicable Federal Aviation Administration requirements and guidelines.” 20 Vt. Stat. Ann. § 4623(a).
Stalking Laws:	
Criminal Law:	<p>“Any person who intentionally stalks another person shall be imprisoned not more than two years or fined not more than \$ 5,000.00, or both.” 13 Vt. Stat. Ann. § 1062.</p> <p>“‘Stalk’ means to engage purposefully in a course of conduct directed at a specific person that the person engaging in the conduct knows or should know would cause a reasonable person to fear for his or her safety or the safety of another or would cause a reasonable person substantial emotional distress.” <i>Id.</i> § 1061(4).</p>
Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Allows:	“The [Vermont Department of Environmental Conservation] shall investigate all citizen complaints of a violation of a federally authorized or delegated program and shall respond to known complaints in writing.” 10 Vt. Stat. Ann. § 8020(j).

²²⁸ “Abandoned property” means “real property on which there is a vacant structure that for the previous 60 days has been continuously unoccupied by a person with the legal right to occupy it and with respect to which the municipality has by first class mail to the owner’s last known address provided the owner with notice and an opportunity to be heard; and (i) property taxes have been delinquent for six months or more; or (ii) one or more utility services have been disconnected.” 13 Vt. Stat. Ann. § 3705(a)(2)(A).

Explicitly Prohibits:	<p>“A law enforcement agency shall not use a drone or information acquired through the use of a drone for the purpose of investigating, detecting, or prosecuting crime,” 20 Vt. Stat. Ann. § 4622(a), unless the drone is operated “for a purpose other than the investigation, detection, or prosecution of crime, including search and rescue operations and aerial photography for the assessment of accidents, forest fires and other fire scenes, flood stages, and storm damage and aerial photography for the assessment of accidents” or pursuant to a warrant, <i>id.</i> § 4622(c).</p> <p>“Information or evidence gathered in violation of this section shall be inadmissible in any judicial or administrative proceeding.” <i>Id.</i> § 4622(e).</p>
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the allegations and other factual contentions have evidentiary support, or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” Vt. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Vt. R. Evid. 901(a).
Expert Testimony:	Vermont Rule of Evidence 702 and <i>Daubert</i> standard. <i>See State v. Brooks</i> , 643 A.2d 226, 229 (1993) (“Similar principles [as in <i>Daubert</i>] should apply here because Vermont’s rules are essentially identical to the federal ones on admissibility of scientific evidence.”).

Virginia



Ongoing Projects:

Federal Project(s)
Operating in the
State:

Sponsored by the U.S. Fish & Wildlife Service, the National Park Service, U.S. Department of Agriculture, the U.S. Department of Interior, and other federal and non-federal sponsors, the American Woodcock Singing-ground Survey monitors woodcock populations in North America. *See American Woodcock Singing-ground Survey*, CITIZENSCIENCE.GOV, <https://www.citizenscience.gov/catalog/182/#> (last visited Feb. 7, 2019). The survey consists of approximately 1,500 Singing-ground Survey routes randomly placed throughout woodcock habitats in Canada and the United States, and serves as a major source of information considered in the annual setting of woodcock hunting seasons. *Id.*; *see also American Woodcock*, U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/birds/surveys-and-data/webless-migratory-game-birds/american-woodcock.php> (last visited Feb. 7, 2019).

The National Oceanic and Atmospheric Administration (“NOAA”) sponsors a citizen science program called “What’s your water level?” *See What’s Your Water Level?*, NAT’L OCEANIC & ATMOSPHERIC ADMINISTRATION, <http://noaa.maps.arcgis.com/apps/MapSeries/index.html?appid=8e4a278576964f47b4fc050e51f344ca> (last visited Feb. 7, 2019). The program, run through an online application, collects and displays photos of water levels. *See id.* The photos are “used by local, state, and national managers and scientists to learn more about high coastal water levels, their causes, and impacts.” *Id.*

State Project(s):

The Virginia Department of Environmental Quality (“DEQ”) is tasked with creating a citizen water quality monitoring program and providing grants to volunteer citizen science groups. *See Va. Code Ann. § 62.1-44.19:11*. DEQ awards grants up to \$11,000 for water quality monitoring, depending on the details of the monitoring plan. *See Citizen Monitoring Grant Opportunities*, VA. DEP’T OF ENVTL. QUALITY, <https://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/WaterQualityMonitoring/CitizenMonitoring/GrantOpportunities.aspx> (last visited Feb. 7, 2019).

The Virginia Master Naturalist Program, which is sponsored by DEQ and multiple other state agencies, “is a statewide corps of volunteers providing education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities.” *The Virginia Master Naturalist Program: Who We Are*, VA. MASTER NATURALISTS, <http://www.virginiamasternaturalist.org/who-we-are.html> (last visited Feb. 7, 2019). The program hosts a variety of citizen science projects, including: [Bat Acoustic Monitoring](#), [Mason Bee Research](#), [the Spotted Skunk Survey](#), and the [Virginia Amphibian Monitoring Program](#). *See Volunteer Opportunities*, VA. MASTER NATURALISTS, <http://www.virginiamasternaturalist.org/volunteer->

	opportunities.html (last visited Feb. 7, 2019).
Collection of Information:	
Research & Collecting Permit:	“Individuals, educational institutions and research agencies must have a completed and approved Research and Collecting Permit [] to research and collect on state park property. DCR does not typically require the permit for unobtrusive observation, but some parks restrict these activities to protect sensitive resources.” <i>General Park Rules and Regulations</i> , VA. DEP’T OF CONSERVATION & RECREATION, http://www.dcr.virginia.gov/state-parks/rules-and-regulations (last visited Feb. 7, 2019); <i>see also</i> Va. Code Ann. § 29.1-418.
Trespass Laws:	
Criminal Liability for Trespass Despite lack of Notice:	No. Criminal liability only attaches “[i]f any person without authority of law goes upon or remains upon the lands, buildings or premises of another . . . after having been forbidden to do so, either orally or in writing . . . or after having been forbidden to do so by a sign or signs posted . . . at a place or places where it or they may be reasonably seen[.]” Va. Code Ann. § 18.2-119.
Agriculture-Related Trespass:	“If any person shall willfully use a spotlight or similar lighting apparatus to cast a light upon private property used for livestock or crops without the written permission of the person in legal possession of such property, he shall be guilty of a Class 3 misdemeanor ²²⁹ .” Va. Code Ann. § 18.2-121.2.
Drone Laws:	
Trespass:	“(A) Any person who knowingly and intentionally causes an unmanned aircraft system to enter the property of another and come within 50 feet of a dwelling house (i) to coerce, intimidate, or harass another person or (ii) after having been given actual notice to desist, for any other reason, is guilty of a Class 1 misdemeanor ²³⁰ . (B) This section shall not apply to any person who causes an unmanned aircraft system to enter the property as set forth in subsection A if (i) consent is given to the entry by any person with legal authority to consent or by any person who is lawfully present on such property or (ii) such person is authorized by federal regulations to operate an unmanned aircraft system and is operating such system in an otherwise lawful manner and consistent with federal regulations.” Va. Code Ann. § 18.2-121.3.
Preemption:	“No political subdivision may regulate the use of a privately owned, unmanned aircraft system as defined in § 19.2-60.1 within its boundaries.” Va. Code Ann. § 15.2-926.3.
State Parks:	“No person shall voluntarily bring, land or cause to descend or alight within or upon any park, any airplane, remote control model aircraft, flying machine, . . . or other apparatus for aviation.” 4 Va. Admin. Code 5-30-400. Use of drones for approved research purposes requires a special use permit. <i>See General Park Rules and Regulations</i> , VA. DEP’T OF CONSERVATION & RECREATION,

²²⁹ A Class 3 misdemeanor is punishable by a fine of not more than \$500. *See* Va. Code Ann. § 18.2-11(c).

²³⁰ A Class 1 misdemeanor is punishable by imprisonment for not more than 12 months and/or a fine of not more than \$2,500. *See* Va. Code Ann. § 18.2-11(a).

	http://www.dcr.virginia.gov/state-parks/rules-and-regulations (last visited Feb. 7, 2019).
Stalking Laws:	
Criminal Law:	“Any person ... who on more than one occasion engages in conduct directed at another person with the intent to place, or when he knows or reasonably should know that the conduct places that other person in reasonable fear of death, criminal sexual assault, or bodily injury to that other person or to that other person’s family or household member[.]” Va. Code Ann. § 18.2-60.3(A).
Civil Law:	“A victim has a civil cause of action against an individual who engaged in conduct that is prohibited under § 18.2-60.3, whether or not the individual has been charged or convicted for the alleged violation, for the compensatory damages incurred by the victim as a result of that conduct, in addition to the costs for bringing the action. If compensatory damages are awarded, a victim may also be awarded punitive damages.” Va. Code Ann. § 8.01-42.3(A).
Use of Information:	
Although our research is incomplete, this provision could be construed to prohibit the use of information collected by citizens.	
Explicitly Prohibits:	“[DEQ] shall establish a citizen water quality monitoring program to provide technical assistance and may provide grants to support citizen water quality monitoring groups if (i) the monitoring is done pursuant to a memorandum of agreement with the Department, (ii) the project or activity is consistent with [DEQ’s] water quality monitoring program, (iii) the monitoring is conducted in a manner consistent with the Virginia Citizens Monitoring Methods Manual, and (iv) the location of the water quality monitoring activity is part of the water quality control plan required under § 62.1-44.19:5.” Va. Code Ann. § 62.1-44.19:11(A). However, “[t]he results of such citizen monitoring shall not be used as evidence in any enforcement action.” <i>Id.</i>
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim “is well grounded in fact.” Va. Code Ann. § 8.01-271.1.
Authentication or Chain of Custody	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the thing in question is what its proponent claims.” Va. Sup. Ct. R. 2:901.
Expert Testimony:	Expert testimony is generally admissible if it will assist the trier of fact in understanding evidence. <i>John v. Im</i> , 559 S.E.2d 694, 696 (Va. 2002) (citing Va. Code Ann. §§ 8.01-401 & 8.01-403). Admissibility is subject to basic requirements, including the requirement that evidence be based on an adequate foundation. <i>See</i> Va. Code Ann. § 8.01-401. The Virginia Supreme Court has left open the question whether the <i>Daubert</i> standard should be applied in trial courts to determine the scientific reliability of expert testimony. <i>Im</i> , 559 S.E.2d at 698.

Washington



Ongoing Projects:

Federal Project(s) Operating in the State: The U.S. Environmental Protection Agency is providing funding to the University of Washington “to deploy next-generation, low-cost particulate matter air sensors in student-directed studies pertaining to wood smoke impacts in their rural community.” *Air Pollution Monitoring for Communities Grants*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/air-research/air-pollution-monitoring-communities-grants> (last visited Feb. 7, 2019).

State Project(s): The Washington Department of Fish & Wildlife runs a volunteer freshwater mussel observation citizen science project. *See Citizen Science Volunteer Opportunities*, WASH. DEP’T OF FISH & WILDLIFE, https://wdfw.wa.gov/about/volunteer/citizen_science.html (last visited Feb. 7, 2019).

Collection of Information:

Scientific Collection Permits: Only qualified individuals and institutions may acquire a scientific collection permit to collect fish or wildlife for research purposes. *See Wash. Rev. Code § 77.32.240; Wash. Admin. Code 220-200-150; id. 220-450-030; Scientific Collection Permits*, WASH. DEP’T OF FISH & WILDLIFE, <https://wdfw.wa.gov/licensing/scp/> (last visited Feb. 7, 2019).

Trespass Laws:

Criminal Liability for Trespass Despite Lack of Notice: No. “A person who enters or remains upon unimproved and apparently unused land, which is neither fenced nor otherwise enclosed in a manner designed to exclude intruders, does so with license and privilege unless notice against trespass is personally communicated to him or her . . . or unless notice is given by posting in a conspicuous manner.” Wash Rev. Code § 9A.52.010.

Drone Laws:

Protection of Orca Whales: Washington has no generally-applicable drone law. A law making it illegal to cause “a vessel or other object to approach, in any manner, within two hundred yards of a southern resident orca whale,” Wash. Rev. Code § 77.15.740(1)(a), has been interpreted by the Washington Attorney General to include drones within the definition of “vessel.” Wash. Att’y Gen. Op. No. 8, 2016 WL 7627024 (Dec. 30, 2016). The law exempts from this prohibition scientific research being conducted “pursuant to a permit or other authorization” from the National Marine Fisheries Service or the Washington Department of Fish and Wildlife. *See Wash. Rev. Code § 77.15.740(4)(b).*

Harassment of Wildlife: “It is unlawful to use a vehicle, aircraft, unmanned aircraft, or motor-propelled boat for the purpose of pursuing, concentrating, or harassing any wild animal or wild bird, except as authorized by the department to aid in addressing wildlife conflict.” Wash. Admin. Code 220-413-070(3).

State Parks: “Remote controlled aircraft may be flown in any state park area pursuant to written permission from the director or designee.” Wash. Admin. Code 352-32-130(5). A violation of this section, “including any failure to abide by a conspicuously posted remote controlled aircraft flying restriction or failure to abide by the terms of written permission to fly remote controlled aircraft, is an

	infraction under chapter 7.84 RCW.” <i>Id.</i> 352-32-130(6); <i>see also Remote Controlled Aircraft Permit</i> , WASH. STATE PARKS, https://parks.state.wa.us/1080/Remote-Controlled-Aircraft (last visited Feb. 7, 2019).
Stalking Laws:	
Criminal Law:	<p>“A person commits the crime of stalking if, without lawful authority and under circumstances not amounting to a felony attempt of another crime:</p> <p>(a) He or she intentionally and repeatedly harasses or repeatedly follows another person; and</p> <p>(b) The person being harassed or followed is placed in fear that the stalker intends to injure the person, another person, or property of the person or of another person. The feeling of fear must be one that a reasonable person in the same situation would experience under all the circumstances; and</p> <p>(c) The stalker either:</p> <p>(i) Intends to frighten, intimidate, or harass the person; or</p> <p>(ii) Knows or reasonably should know that the person is afraid, intimidated, or harassed even if the stalker did not intend to place the person in fear or intimidate or harass the person.” Wash. Rev. Code § 9A.46.110(1).</p>
Civil Law:	<p>“In addition to the criminal penalty provided in RCW 9A.36.080 for committing a crime of malicious harassment, the victim may bring a civil cause of action for malicious harassment against the harasser. A person may be liable to the victim of malicious harassment for actual damages, punitive damages of up to ten thousand dollars, and reasonable attorneys’ fees and costs incurred in bringing the action.” Wash. Rev. Code § 9A.36.083.</p>
Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Allows:	The Washington Department of Ecology has been directed to assemble and evaluate citizen-collected water quality information that “meets the state’s requirements for data quality.” <i>See</i> Wash Rev. Code § 90.48.570(1)(b).
Prohibitive by Effect:	<p>“[D]ata is considered credible data if... (a) Appropriate quality assurance and quality control procedures were followed and documented in collecting and analyzing water quality samples; . . . and</p> <p>(d) Sampling and laboratory analysis conform to methods and protocols generally acceptable in the scientific community as appropriate for use in assessing the condition of water.” Wash. Rev. Code § 90.48.585(1).</p>
Evidentiary Standards:	
Pleading a Claim:	Requires certification that the claim “is well grounded in fact.” Wash. Super. Ct. Civ. R. 11.
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Wash. R. Evid. 901(a).
Expert Testimony:	<i>Frye</i> standard. <i>See State v. Copeland</i> , 922 P.2d 1304, 1312-15 (Wash. 1996) (en banc); <i>State v. Riker</i> , 869 P.2d 43, 47-48 (Wash. 1994) (en banc).

West Virginia



Ongoing Projects:

State Project(s):	<p>The West Virginia Department of Environmental Protection (“WVDEP”) runs a volunteer water quality monitoring program: WV Save our Streams. <i>See WV Save Our Streams</i>, W. VA. DEP’T OF ENVTL. PROTECTION, http://www.dep.wv.gov/WWE/getinvolved/sos/Pages/default.aspx (last visited Feb. 7, 2019). Through the program, volunteers monitor macroinvertebrate populations, using them as indicator species for water quality. <i>See id.</i> WVDEP appears to have created this program on its own initiative.</p> <p>In April 2017, the West Virginia Division of Natural Resources launched a citizen science initiative to document the distribution of timber rattlesnakes in the state. <i>See Help Biologists Track the Distribution of West Virginia’s State Reptile</i>, W. VA. DIVISION OF NAT. RESOURCES, http://www.wvdnr.gov/rattlesnake-report/ (last visited Feb. 7, 2019).</p>
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Collection of Information:

Scientific Collecting Permit:	Only qualified individuals and institutions may acquire a scientific collection permit to collect fish or wildlife for research purposes. <i>See W. Va. Code § 20-2-50; W. Va. Code R. 58-42-1 et seq.; West Virginia Scientific Collecting Permit Application Requirements</i> , W.VA. DIVISION OF NAT. RESOURCES, http://www.wvdnr.gov/wildlife/scollectpermit.shtm (last visited Feb. 7, 2019).
Other Provisions:	<i>See infra</i> “Drone Laws.”

Trespass Law:

Criminal Liability for Trespass Despite Lack of Notice:	No. Entry upon property does not constitute criminal trespass unless “notice against entering or remaining is either given by actual communication . . . or by posting, fencing, or cultivation.” W. Va. Code § 61-3B-3(a).
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Drone Law:

Law:	<p>“[A] person may not operate an unmanned aircraft system:</p> <ol style="list-style-type: none"> (1) To knowingly and intentionally capture or take photographs, images, video, or audio of another person or the private property of another, without the other person’s permission, in a manner that would invade the individual’s reasonable expectation of privacy, including, but not limited to, capturing, or recording through a window; (2) To knowingly and intentionally view, follow, or contact another person or the private property of another without the other person’s permission in a manner that would invade the individual’s reasonable expectation of privacy, including, but not limited to, viewing, following, or contacting through a window....” W. Va. Code § 61-16-2(a)(1)-(2).
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	“Any person violating the provisions of subsection (a) of this section is guilty of a misdemeanor and, upon conviction thereof, shall be fined not less than \$100 nor more than \$1,000 or confined in jail for not more than one year, or both fined and confined.” <i>Id.</i> § 61-16-2(b).
Harassment of Wildlife:	It is prohibited to “[u]se a drone or other unmanned aircraft to hunt, take, wound, harass, transport, or kill a wild bird or wild animal[.]” W. Va. Code § 20-2-5(a)(5).
State Parks:	“Persons who intend to operate an unmanned aircraft system shall register at the area superintendent’s office prior to engaging or participating in the operation of any unmanned aircraft system and specify where the activity will take place.... Participants in drone operation activities assume full responsibility and liability for any risk or injury related to using an unmanned aircraft system.” W. Va. Code § 20-5-2(b)(16).
Stalking Laws:	
Criminal Law:	“Any person who repeatedly follows another knowing or having reason to know that the conduct causes the person followed to reasonably fear for his or her safety or suffer significant emotional distress, is guilty of a misdemeanor and, upon conviction thereof, shall be incarcerated in the county or regional jail for not more than six months or fined not more than one thousand dollars, or both.” W. Va. Code § 61-2-9a(a).
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	“In enforcing emission limitations in any rule, including any rule which has been incorporated into the State Implementation Plan by [the U.S. Environmental Protection Agency], any credible evidence may be used by the Director for the purpose of establishing whether a person has violated or is in violation.” W. Va. Code R. § 45-38-5.1.
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “the allegations and other factual contentions have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery.” W. Va. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.” W. Va. R. Evid. 901(a).
Expert Testimony:	<i>Wilt-Daubert</i> standard, but only for scientific knowledge. <i>See Gentry v. Mangum</i> , 466 S.E.2d 171, 185-86 (W. Va. 1995); <i>Wilt v. Buracker</i> , 443 S.E.2d 196, 203 (W. Va. 1993).

Wisconsin

WISCONSIN



1848

Ongoing Projects:

Federal Project(s)
Operating in the
State:

The U.S. Environmental Protection Agency (“EPA”) has partnered with Wisconsin Department of Natural Resources (“WDNR”) and other state agencies to enlist citizen scientists in research projects to help monitor invasive species in the Great Lakes. *See* Press Release, *EPA Partners with Michigan, Wisconsin and Citizen Scientists on Innovative Great Lakes Research Project*, U.S. ENVTL. PROTECTION AGENCY (Aug. 22, 2017), <https://www.epa.gov/newsreleases/epa-partners-michigan-wisconsin-and-citizen-scientists-innovative-great-lakes-research>. One project specifically engages citizen scientists to analyze videos for habitat characteristics and invasive species to close current knowledge gaps. *See Using Citizen Science to Analyze Underwater Video in the Great Lakes*, U.S. ENVTL. PROTECTION AGENCY, <https://www.epa.gov/innovation/using-citizen-science-analyze-underwater-video-great-lakes> (last visited Feb. 7, 2019).

State Project(s):

Wisconsin state law requires that the WDNR “establish a stream watch program to encourage the volunteer activities of the community . . . to monitor and improve stream quality. . . .” Wis. Stat. Ann. § 23.094(7). The Water Action Volunteers Stream Monitoring Program, which is coordinated between WDNR and the University of Wisconsin – Cooperative Extension, uses volunteer citizen scientists to monitor water quality parameters and “assess the aquatic and streamside habitat as well as the stream’s macroinvertebrate community, using a biotic index.” *What’s Monitored*, WATER ACTION VOLUNTEERS, <http://watermonitoring.uwex.edu/wav/monitoring/monitored.html> (last visited Feb. 7, 2019); *see also* WATER ACTION VOLUNTEERS, <http://watermonitoring.uwex.edu/level1/wav.html> (last visited Feb. 7, 2019).

Wisconsin regulations also require WDNR to establish a lake monitoring network. *See* Wis. Admin. Code §§ NR 192.01–192.07. The Citizen Lake Monitoring Network (“CLMN”) connects over 1,000 citizen volunteers to the Wisconsin Lakes Partnership. *See Citizen Lake Monitoring Network*, U. OF WIS. STEVENS POINT, <https://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/programs/clmn/default.aspx> (last visited Feb. 7, 2019). CLMN staff provide volunteers with the necessary equipment and training to conduct monitoring activities. *Id.* The information gathered by these programs is used by WDNR in protecting water quality. *Id.*

WDNR sponsors additional wildlife and plant citizen science projects, such as the [Wisconsin Bat Monitoring Program](#), [Snapshot Wisconsin](#), and the [Wisconsin Rare Plant Monitoring Program](#). *See Citizen-based Monitoring*, WIS. DEP’T OF NAT. RESOURCES, <https://dnr.wi.gov/volunteer/CitizenBasedMonitoring.html> (last visited Feb. 7, 2019).

Collection of Information:	
Research Permits:	WDNR “issues permits, authorizations and licenses for research, education and other activities that involve rare, nongame and game species and habitats. Each has its own application requirements and procedures.” <i>Species Collection and Research Permits and Licenses</i> , WIS. DEP’T OF NAT. RESOURCES, https://dnr.wi.gov/topic/endangeredresources/permits.html#tabx6 (last visited Feb. 7, 2019); <i>see also</i> Wis. Stat. Ann. § 29.614; <i>id.</i> § 169.25; Wis. Admin. Code NR § 19.11.
Trespass Laws:	
Liability for Trespass Despite Lack of Notice:	A person commits trespass by entering the land of another “without the express or implied consent of the owner or occupant” or “after having been notified by the owner or occupant not to enter or remain on the premises.” Wis. Stat. Ann. § 943.13(1m)(a), (am) & (b). This includes agricultural land. <i>Id.</i> § 943.13(1m)(am). Notice is one factor in considering the presence of implied consent. <i>Id.</i> § 943.13(1s) (Implied Consent); <i>see also, id.</i> § 943.13(2)(am) (Notice). However, this prohibition does not apply to “open land,” which is land that is not “in the immediate vicinity[] of a structure or improvement.” <i>Id.</i> § 943.13(1e)(cr)(2). Trespass is not punishable as a crime in Wisconsin, but constitutes a Class B forfeiture. ²³¹ <i>Id.</i> § 943.13 (1m).
Other Provisions:	<i>See infra</i> “Critical Infrastructure Laws.”
Drone Laws:	
Surveillance Law:	“Whoever uses a drone . . . with the intent to photograph, record, or otherwise observe another individual in a place or location where the individual has a reasonable expectation of privacy is guilty of Class A misdemeanor.” ²³² Wis. Stat. Ann. § 942.10.
Interference with Hunting, Fishing or Trapping:	“No person may interfere or attempt to interfere with lawful hunting, fishing, or trapping with the intent to prevent the taking of a wild animal, or intentionally interfere with or intentionally attempt to interfere with an activity associated with lawful hunting, fishing, or trapping, by . . . [p]hotographing, videotaping, audiotaping, or through other electronic means, monitoring or recording the activities of the person.” Wis. Stat. Ann. § 29.083(2)(a)(7)(c). The prohibited conduct explicitly includes “using a drone” to carry out these activities. <i>Id.</i> § 29.083(2)(a)(8). <u>Civil Liability:</u> “A person who is adversely affected by, or who reasonably may be expected to be adversely affected by, conduct that is in violation of sub. (2)(a) may bring an action in circuit court for an injunction or damages or both.” <i>Id.</i> § 29.083(4)(a).

²³¹ A Class B forfeiture is punishable by a fine not to exceed \$1,000. *See* Wis. Stat. Ann. § 939.52(3)(b).

²³² A Class A misdemeanor is punishable by a maximum fine of \$10,000 or imprisonment not to exceed 9 months, or both. *See* Wis. Stat. Ann. § 939.51(3)(a).

Preemption:	No political subdivision may regulate the ownership or operation of a drone, Wis. Stat. Ann. § 114.105(4)(b), except when enacting “an ordinance limiting the use of drones by the political subdivision,” <i>id.</i> § 114.105(3).
State Parks:	“The use of unmanned aerial vehicles (UAVs), also known as drones, and other flying related activities ... is prohibited, except where posted for their use, at state parks, state recreation areas, state natural areas, the Kettle Moraine and Point Beach state forests, and the Lower Wisconsin state riverway.” <i>Flying Related Activities</i> , WIS. DEP’T OF NAT. RESOURCES, https://dnr.wi.gov/topic/parks/rules/flying.html (last visited Feb. 7, 2019); <i>see also</i> Wis. Admin. Code NR § 45.04(1)(c).
Critical Infrastructure Laws:	
Trespass Against Energy Provider:	Trespass against “energy provider property,” defined as “property that is part of an electric generation, distribution, or transmission system or part of a natural gas distribution system,” Wis. Stat. Ann. § 943.143(1)(b), including decommissioned nuclear power plants, is a Class H felony ²³³ , <i>id.</i> § 943.143(2).
Stalking Laws:	
Criminal Law:	A person commits stalking by meeting all of the following criteria: “(a) The actor intentionally engages in a course of conduct directed at a specific person that would cause a reasonable person under the same circumstances to suffer serious emotional distress or to fear bodily injury to or the death of himself or herself or a member of his or her family or household. (b) The actor knows or should know that at least one of the acts that constitute the course of conduct will cause the specific person to suffer serious emotional distress or place the specific person in reasonable fear of bodily injury to or the death of himself or herself or a member of his or her family or household. (c) The actors acts cause the specific person to suffer serious emotional distress or induce fear in the specific person of bodily injury to or the death of himself or herself or a member of his or her family or household.” Wis. Stat. Ann. § 940.32(2).
Use of Information:	
Although our research is incomplete, this provision could be construed to allow the use of information collected by citizens.	
Explicitly Allows:	Wisconsin regulations order WDNR to “[a]nalyze, report and share the data collected through” the CLMN. Wis. Admin. Code § NR 192.04(4); <i>see also supra</i> “Ongoing Projects.”
Evidentiary Standards:	
Pleading a Claim:	Requires certification that “[t]he allegations and other factual contentions stated in the paper have evidentiary support or, if specifically so identified, are likely to

²³³ A Class H felony is punishable by a maximum fine of \$10,000 or imprisonment up to 6 years, or both. *See* Wis. Stat. Ann. § 939.50(3)(h).

	have evidentiary support after a reasonable opportunity for further investigation or discovery.” Wis. Stat. Ann. § 802.05(2)(c).
Authentication or Chain of Custody:	“The requirements of authentication or identification as a condition precedent to admissibility are satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Wis. Stat. Ann. § 909.01.
Expert Testimony:	Wisconsin Statute Section 907.02(1) with instruction from <i>Daubert</i> and its progeny. <i>See Seifert v. Balink</i> , 888 N.W.2d 816, 830 (Wisc. 2017).

Wyoming



Ongoing Projects:

State Project(s): The Western Asio Flammeus Landscape Study (“WAfLS”) is a citizen science project with support from multiple state agencies and universities, including the Wyoming Game & Fish Department and University of Wyoming Biodiversity Institute. *See Short-Eared Owls*, AVIAN KNOWLEDGE NORTHWEST, <http://www.avianknowledgenorthwest.net/citizen-science/short-eared-owls> (last visited Feb. 7, 2019); *see also Program Partners*, AVIAN KNOWLEDGE NORTHWEST, <http://www.avianknowledgenorthwest.net/citizen-science/short-eared-owls/37-program-partners> (last visited Feb. 7, 2019). The project uses volunteers to “assess the population status, trends, and threats against the Short-eared Owl, an enigmatic, open-country species.” *WAfLS Project Overview*, AVIAN KNOWLEDGE NORTHWEST, <http://www.avianknowledgenorthwest.net/citizen-science/short-eared-owls/53-wafl-project-overview> (last visited Feb. 7, 2019).

Collection of Information:

Trespass Related to Resource Data Collection: “A person is guilty of trespassing to unlawfully collect resource data from private land if he . . . [e]nters onto private land for the purpose of collecting resource data; and . . . [d]oes not have . . . [a]n ownership interest in the real property or, statutory, contractual or other legal authorization to enter the private land to collect the specified resource data; or . . . [w]ritten or verbal permission of the owner . . . to enter the private land to collect the specified resource data.” Wyo. Stat. Ann. § 6-3-414(a). These offenses are punishable by up to one year imprisonment and/or a maximum fine of \$1,000. *Id.* § 6-3-414(d)(i).

“Collect” means “to take a sample of material, acquire, gather, photograph or otherwise preserve information in any form and the recording of a legal description or geographical coordinates of the location of the collection.” *Id.* § 6-3-414(e)(i).

“[R]esource data” means “data relating to land or land use, including but not limited to data regarding agriculture, minerals, geology, history, cultural artifacts, archaeology, air, water, soil, conservation, habitat, vegetation or animal species.” *Id.* § 6-3-414(e)(iv).

The conduct described above also gives rise to civil liability. *See id.* § 40-27-101.

Scientific Research Permit: In order to conduct scientific studies that take wildlife, a person or institution must apply to the Wyoming Game and Fish Department for a permit. *See* Wyo. Admin. Code 040.0001.33 § 3; *Issuance of Scientific Research Permits*, WYO. GAME & FISH DEP’T, <https://wgfd.wyo.gov/Regulations#Issuance-of-Scientific-Research-Permits> (last visited Feb. 7, 2019).

Place of Collection:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>Yes. A person must have “[w]ritten or verbal permission of the owner . . . to enter . . . private land to collect . . . resource data,” regardless of whether or not notice against trespass has been given. Wyo. Stat. Ann. § 6-3-414(a)(ii)(B).</p> <p><u>Note:</u> This permission was previously needed to cross private land to get to public land. <i>Id.</i> § 6-3-414(c). That is no longer the case as a district court found subsection (c) unconstitutional under the First Amendment. <i>See W. Watersheds Project v. Michael</i>, 353 F. Supp. 3d 1176 (D. Wyo. 2018).</p>
Trespass Laws:	
Criminal Liability for Trespass Despite Lack of Notice:	<p>No. “A person is guilty of criminal trespass if he enters or remains on or in the land or premises of another person, knowing he is not authorized to do so, or after being notified to depart or to not trespass. For purposes of this section, notice is given by:</p> <ul style="list-style-type: none"> (i) Personal communication to the person by the owner or occupant, or his agent, or by a peace officer; or (ii) Posting of signs reasonably likely to come to the attention of intruders.” Wyo. Stat. Ann. § 6-3-303(a).
Collection/Place of Information:	<i>See supra</i> “Collection of Information” and “Place of Collection.”
Drone Laws:	
Law:	<p>“(a) Flight of aircraft, including unmanned aircraft or vertical takeoff and landing aircraft, over the lands and waters of this state is lawful unless it is:</p> <ul style="list-style-type: none"> (i) At such a low altitude as to interfere with the existing use to which the land or water, or the space over the land or water, is put by the owner; (ii) Conducted as to be imminently dangerous to persons or property lawfully on the land or water; or (iii) In violation of the air commerce regulations promulgated by the department of transportation of the United States. <p>(b) The landing of an aircraft, including an unmanned aircraft or vertical takeoff and landing aircraft, on the lands or waters of another, without his consent, is unlawful, except in the case of a forced landing.” Wyo. Stat. Ann. § 10-4-303.</p>
State Parks:	“The operation or use of aircraft on lands or waters [in state parks] other than at landing areas designated in special regulations is prohibited.” Wyo. Admin. Code SPCR SPHS Ch. 1 § 6(a).
Stalking Laws:	
Criminal Law:	<p>“Unless otherwise provided by law, a person commits the crime of stalking if . . . the person engages in a course of conduct reasonably likely to harass that person, including but not limited to any combination of the following:</p> <ul style="list-style-type: none"> (i) Communicating, anonymously or otherwise, or causing a communication with another person by verbal, electronic, mechanical, telegraphic, telephonic or written means in a manner that harasses; (ii) Following a person, other than within the residence of the defendant; (iii) Placing a person under surveillance by remaining present outside his or her school, place of employment, vehicle, other place occupied by the person, or residence other than the residence of the defendant; or

	(iv) Otherwise engaging in a course of conduct that harasses another person.” Wyo. Stat. Ann. § 6-2-506(b).
Civil Law:	“(a) A person who is the victim of stalking as ... may maintain a civil action against an individual who engages in a course of conduct that is prohibited under W.S. 6-2-506 for damages incurred by the victim as a result of that conduct. The aggrieved party may also seek and be awarded exemplary damages, reasonable attorney’s fees and costs of the action. (b) A civil action may be maintained under this section whether or not the individual who is alleged to have engaged in a course of conduct prohibited under W.S. 6-2-506 has been charged or convicted under for the alleged crime. (c) Neither the pendency nor the termination of a civil action under this section shall prevent the criminal prosecution of a person who violates W.S. 6-2-506.” Wyo. Stat. Ann. § 1-1-126.
Use of Information:	
Although our research is incomplete, these provisions address the use of information collected by citizens.	
Explicitly Allows:	“Any person at any time may petition the [the Wyoming Department of Environmental Quality] or the [Environmental Quality Council] to change the classification, add or remove a designated use, or establish site-specific criteria on any surface water.” Wyo. Admin. Code ENV WQ Ch. 1 § 33(a).
Explicitly Prohibits:	No resource data collected on private land in violation of [Wyoming’s Data Collection Trespass Laws, <i>see supra</i> “Collection of Information”] is admissible in evidence in any civil, criminal or administrative proceeding, other than a prosecution for violation of this section[.]” Wyo. Stat. Ann. § 6-3-414(f); <i>id.</i> § 40-27-101(f). Additionally, “[r]esource data collected on private land in violation of [Wyoming’s Data Collection Trespass Laws] in the possession of any governmental entity . . . shall be expunged by the entity from all files and data bases, and shall not be considered in determining any agency action.” <i>Id.</i> § 6-3-414(g); <i>id.</i> § 40-27-101(g).
Prohibitive by Effect:	[A]ll changes to use designations . . . shall include the consideration of credible data relevant to the decision.” Wyo. Admin. Code ENV WQ Ch. 1 § 35(c). Credible data shall “[c]onsist of data collection using accepted referenced laboratory and field methods employed by a person who has received specialized training and has field experience in developing a monitoring plan, a quality assurance plan, and employing the methods outlined in such plans or works under the supervision of a person who has these qualifications. Specialized training includes a thorough knowledge of written sampling protocols and field methods such that the data collection and interpretation are reproducible, scientifically defensible and free from preconceived bias[.]” <i>Id.</i> Ch. 1 § 35(a)(i).
Evidentiary Standards:	

Pleading a Claim:	Requires certification that “the factual contentions have evidentiary support or, if specifically so identified, will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.” Wyo. R. Civ. P. 11(b)(3).
Authentication or Chain of Custody:	“The requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims.” Wyo. R. Evid. 901(a).
Expert Testimony:	Wyoming Rule of Evidence 702 and <i>Daubert</i> standard. See <i>Bunting v. Jamieson</i> , 984 P.2d 467, 471 (Wyo. 1999).

Appendix III: Resources Related to Pollutants Monitored by the EPA

Resources for Learning About a Pollutant		
Resources that are Highlighted Report Pollutant Quantities		
Pollutant Type	Description	References
Air Pollutants	List of Hazardous Air Pollutants	Clean Air Act Section 112(b) (42 U.S.C. § 7412(b)); https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications
	National Primary and Secondary Ambient Air Quality Standards	40 C.F.R. pt. 50
	National Emission Standards for Hazardous Air Pollutants	40 C.F.R. pt. 61; https://www.epa.gov/compliance/national-emission-standards-hazardous-air-pollutants-compliance-monitoring
	National Ambient Air Quality Standards Table	https://www.epa.gov/criteria-air-pollutants/naaqs-table%20
Ozone - Depleting Substances	Class I Controlled Substances	40 C.F.R. pt. 82, Appendix A to Subpart A
	Class II Controlled Substances	40 C.F.R. pt. 82, Appendix B to Subpart A
	Listing of Ozone-Depleting Chemicals	40 C.F.R. pt. 82, Appendix F to Subpart A
Water Pollutants	List of Hazardous Substances	Clean Water Act Section 311(b)(4) (33 U.S.C. §1321(b)(4))
	Alphabetical and by CAS number	40 C.F.R. § 116.4
	Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act	40 C.F.R. § 117.3
	Toxic Pollutant Effluent Standards	40 C.F.R. pt. 129
	Ground Water Monitoring List	40 C.F.R. pt. 264, Appendix IX
	Toxic Pollutant List	40 C.F.R. § 401.15
	Priority Pollutant List	40 C.F.R. pt. 423, Appendix A
Drinking Water Standards	Table of Regulated Drinking Water Contaminants	https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations
	Maximum Contaminant Levels for Organic Contaminants	40 C.F.R. § 141.61
	Maximum Contaminant Levels for Inorganic Contaminants	40 C.F.R. § 141.62
	Maximum Contaminant Levels for Microbiological Contaminants	40 C.F.R. § 141.63
	Maximum Contaminant Levels for Disinfection Byproducts	40 C.F.R. § 141.64

Resources for Learning About a Pollutant		
Resources that are Highlighted Report Pollutant Quantities		
Pollutant Type	Description	References
	Maximum Residual Disinfectant Levels	40 C.F.R. § 141.65
	Maximum Contaminant Levels of Radionuclides	40 C.F.R. § 141.66
	Monitoring Requirements for Lead and Copper in Tap Water	40 C.F.R. § 141.86
	Monitoring Requirements for Lead and Copper in Source Water	40 C.F.R. § 141.88
Hazardous Wastes Under the Resource Conservation and Recovery Act	Hazardous Wastes from Non-Specific Sources	40 C.F.R. § 261.31
	Hazardous Wastes from Specific Sources	40 C.F.R. § 261.32
	Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof (Acute and Toxic Wastes)	40 C.F.R. § 261.33
	Hazardous Constituents List	40 C.F.R. pt. 261, Appendix VIII
	Wastes Excluded from Specific Sources	40 C.F.R. pt. 261, Appendix IX, Table 1
Hazardous Substances Under the Comprehensive Environmental Response, Compensation, and Liability Act	List of Hazardous Substances and Their Reportable Quantities	40 C.F.R. § 302.4
Extremely Hazardous Substances Under the Emergency Planning and Community Right-to-Know Act	The List of Extremely Hazardous Substances and Their Threshold Planning Quantities	40 C.F.R. pt. 355, Appendices A & B
	Alphabetical, by CAS number, and chemical category	40 C.F.R. § 372.65

Appendix IV: Public Compliance and Permit Records

Resources for Learning About a Pollutant Source		
Category	Description	References
General: EPA Compliance	Description of how the EPA measures compliance	https://www.epa.gov/compliance/how-we-monitor-compliance
	Compilation of EPA Compliance Records	https://echo.epa.gov/
Clean Air	Compilation of EPA Resources	https://www.epa.gov/caa-permitting/caa-permitting-tools-related-resources
	<u>Title V Permits</u> : General Information	https://www.epa.gov/title-v-operating-permits
	<u>Title V Permits</u> : Who has to obtain a Title V Permit?	https://www.epa.gov/title-v-operating-permits/who-has-obtain-title-v-permit
	<u>Title V Permits</u> : EPA Issued Operating Permits	https://www.epa.gov/title-v-operating-permits/epa-issued-operating-permits
	<u>Title V Permits</u> : Links to Resources of Regional Office Websites	https://www.epa.gov/caa-permitting
	<u>Integrated Compliance Information System - Air (“ICIS-AIR”)</u> : a. “ICIS-AIR contains compliance and permit data for stationary sources of air pollution (such as electric power plants, steel mills, factories, and universities) regulated by EPA, state and local air pollution agencies. The information in ICIS-AIR is used by the states to prepare State Implementation Plans (SIPs) and to track the compliance status of point sources with various regulatory programs under Clean Air Act.”	https://www.epa.gov/enviro/icis-air-search
Clean Water	<u>National Pollutant Discharge Elimination System (“NPDES”) General Permit Inventory</u> : “This search tool allows users to search for NPDES general permits by permit number, permit name, state, EPA region, date issued, date expired, or permit category.”	https://ofmpub.epa.gov/apex/aps/f?p=GPWI:HOME:.....
	<u>Permit Compliance System - Integrated Compliance Information (“PCS-ICIS”)</u> : a. “This search allows you to retrieve selected data . . . regarding facilities registered with the federal enforcement and compliance (FE&C) and holding National Pollutant Discharge Elimination System (NPDES) permits.”	https://www.epa.gov/enviro/pcs-icis-search

Resources for Learning About a Pollutant Source		
Category	Description	References
	<p><u>Clean Water Act DMR Pollutant Loading Tool</u>: "This tool helps users determine who is discharging, what pollutants they are discharging and how much, and where they are discharging."</p>	https://cfpub.epa.gov/dmr/
	<p><u>The Assessment TMDL Tracking & Implementation System ("ATTAINS")</u>: "Provides information reported by the states to EPA about the conditions in their surface waters and allows users to view tables and charts summarizing state-reported data for the nation as a whole, individual states, individual waters and the 10 EPA regions."</p>	https://www.epa.gov/waterdata/assessment-and-total-maximum-daily-load-tracking-and-implementation-system-attains
Clean Drinking Water	Consumer Confidence Reports	https://ofmpub.epa.gov/apex/safe-water/f?p=136:102:::)
	<p><u>Safe Drinking Water Information System ("SDWIS")</u>: "Contains information about public water systems and their violations of EPA's drinking water regulations. Searching SDWIS will allow you to locate your drinking water supplier and view its violations and enforcement history for the last ten years."</p>	https://www.epa.gov/enviro/sdwis-search
Resource Conservation and Recovery Act	General Permitting Resources	https://www.epa.gov/hwpermitting
	<p><u>Hazardous Waste Permitting in Your State</u>: Provides "a map and an alphabetically linked list of state hazardous waste permit websites . . . In some cases, states have posted lists of permitted treatment, storage and disposal facilities (TSDFs)."</p>	https://www.epa.gov/hwpermitting/hazardous-waste-permitting-your-state
	<p><u>Resource Conservation and Recovery Act Information ("RCRAInfo")</u>: a. "You may use the RCRAInfo Search to determine identification and location data for specific hazardous waste handlers, and to find a wide range of information on treatment, storage, and disposal facilities regarding permit/closure status, compliance with Federal and State regulations, and cleanup activities."</p>	https://www3.epa.gov/enviro/facts/rcrainfo/search.html

Resources for Learning About a Pollutant Source		
Category	Description	References
Other Resources	<p><u>Toxics Release Inventory</u> (“TRI”): “The Toxics Release Inventory (TRI) tracks the management of over 650 toxic chemicals that pose a threat to human health and the environment. U.S. facilities in certain industry sectors that manufacture, process, or otherwise use these chemicals in amounts above established levels must report how each chemical is managed through recycling, energy recovery, treatment, and releases to the environment. A “release” of a chemical means that it is emitted to the air or water, or placed in some type of land disposal. The information submitted by facilities to the EPA and states is compiled annually as the Toxics Release Inventory or TRI.”</p>	<p>https://www.epa.gov/toxics-release-inventory-tri-program</p>
	<p><u>Biennial Reports Search</u>: “The Hazardous Waste Report (Biennial Report) collects data on the generation, management, and minimization of hazardous waste. This provides detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage, and disposal facilities. The Biennial Report data provide a basis for trend analyses. Data about hazardous waste activities is reported for odd number years (beginning with 1989) to EPA. EPA then provides reports on hazardous waste generation and management activity that accompany the data files. You may use a variety of data retrieval options in the BR Search to search for other facilities that interest you.”</p>	<p>https://www.epa.gov/enviro/br-search</p>
	<p><u>Envirofacts</u>: Provides links to various public databases. Also provides a search functionality that incorporates various databases into one.</p>	<p>https://www3.epa.gov/enviro/</p>

Appendix V: EPA Reference Methods, Standard Protocols, Etc.

Resources Related to EPA Reference Methods, Standard Protocols, Etc.			
Sample Type	Sample Subcategory	Description	References
All	-	General Resources	https://www.epa.gov/measurements/collection-methods ; Index to EPA Test Methods (April 2003 Revised Edition)
Air	Source Emission Methods	<u>Promulgated Methods</u> : those that have been promulgated in the Federal Register and <u>Codified in the CFR (Method - #)</u>	https://www.epa.gov/emc/emc-promulgated-test-methods ; 40 C.F.R. pt. 51, Appendix M ; 40 C.F.R. pt. 60, Appendices A-1 – A-8, C, F & G ; 40 C.F.R. pt. 61, Appendix B ; 40 C.F.R. pt. 63, Appendix A
		<u>Proposed Methods</u> : those that have been published in the Federal Register as proposed rules, but have not yet been promulgated	https://www.epa.gov/emc/emc-proposed-test-methods
		<u>Approved Alternative</u> : those approved under 40 CFR Parts 60, 601, and 63 (ALT - #)	https://www.epa.gov/emc/broadly-applicable-approved-alternative-test-methods
		<u>Conditional Methods</u> : methods that were at one point labeled this way, so they have remained so for consistency (CTM - #)	https://www.epa.gov/emc/emc-conditional-test-methods
		<u>Other Methods</u> : methods which have not yet been subject to the federal rulemaking process (Preliminary Methods [PRE - #]; Preliminary Performance Specification [PPS - #]; and Other Test Methods [OTM - #])	https://www.epa.gov/emc/emc-other-test-methods
		<u>Criteria Pollutants</u> : TSP, Particulate Matter – PM10, Particulate Matter – PM2.5, Particulate Matter – PM10-2.5, SO2, O3, CO, NO2, Pb	List of Designated Reference and Equivalent Methods (Dec. 2018)
	Ambient Monitoring Methods	<u>Air Toxins - Inorganic Compendium (Method IO - #)</u>	https://www3.epa.gov/ttn/amtic/inorg.html
		<u>Air Toxins - Organic Compendium (Method IO - #)</u>	https://www3.epa.gov/ttnamti1/files/ambient/airtox/tocomp99.pdf

Resources Related to EPA Reference Methods, Standard Protocols, Etc.			
Sample Type	Sample Subcategory	Description	References
			https://www.epa.gov/pcbs/compendium-methods-determination-toxic-organic-compounds-ambient-air
Water	Drinking Water Analytical Methods	<u>Disinfection Byproduct Rules</u>	https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100PHKC.txt ; 40 C.F.R. § 141.131
		<u>Alternative Testing Methods:</u> methods which have been approved under the Safe Drinking Water Act	40 C.F.R. pt. 141, Appendix A of Subpart C
		<u>Ground Water Rule</u>	https://www.epa.gov/sites/production/files/2017-02/documents/gwr_approved_methods.pdf
		<u>Inorganic Contaminants and Other Inorganic Constituents</u>	https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100PHGZ.txt ; 40 C.F.R. § 141.23
		<u>Long Term 2 Enhanced Surface Water Treatment Rule</u>	https://www.epa.gov/sites/production/files/2015-09/documents/methods_lt2.pdf ; Methods for Cryptosporidium are listed at 40 C.F.R. § 141.704 ; Methods for enumeration of E. coli in source water are listed in Table 1H at 40 C.F.R. § 136.3(a) ; Methods for turbidity are listed at 40 C.F.R. § 141.74 ; Monitoring requirements for these contaminants are specified in 40 C.F.R. §§ 141.701-703
		<u>Organic Contaminants</u>	https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100PHJC.txt
		<u>Radionuclides</u>	https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100PHIN.txt ; 40 C.F.R. § 141.25

Resources Related to EPA Reference Methods, Standard Protocols, Etc.			
Sample Type	Sample Subcategory	Description	References
		<u>Revised Total Coliform Rule</u>	https://www.epa.gov/sites/production/files/2017-02/documents/rtrc_approved_methods.pdf ; 40 C.F.R. § 141.852(a)(5)
		<u>Secondary Contaminants</u>	https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100PHL2.txt ; Methods for copper, fluoride and pH are listed in 40 C.F.R. § 141.23 ; Methods for the remaining contaminants are in 40 C.F.R. § 143.4
		<u>Surface Water Treatment Methods</u>	https://www.epa.gov/sites/production/files/2017-02/documents/swtr_approved_methods.pdf ; 40 C.F.R. § 141.74(a)(1)
	Clean Water Act Analytical Methods	<u>Chemical Methods: Inorganic Non-Metals</u>	https://www.epa.gov/cwa-methods/approved-cwa-test-methods-inorganic-non-metals ; 40 C.F.R. pt. 136 ; 40 C.F.R. pts. 401 – 503 (1 , 2)
		<u>Chemical Methods: Metals</u>	https://www.epa.gov/cwa-methods/approved-cwa-test-methods-metals ; 40 C.F.R. pt. 136 ; 40 C.F.R. pts. 401 – 503 (1 , 2)
		<u>Chemical Methods: Organic</u>	https://www.epa.gov/cwa-methods/approved-cwa-test-methods-organic-compounds ; 40 C.F.R. pt. 136 ; 40 C.F.R. pts. 401 – 503 (1 , 2)
		<u>Microbial Methods: wastewater and sewage sludge and ambient water</u>	https://www.epa.gov/cwa-methods/approved-cwa-microbiological-test-methods ; 40 C.F.R. pt. 136 ;

Resources Related to EPA Reference Methods, Standard Protocols, Etc.				
Sample Type	Sample Subcategory	Description	References	
			40 C.F.R. pts. 401 – 503 (1, 2)	
		<u>Whole Effluent Toxicity Methods</u> : acute, chronic freshwater, and chronic marine/estuarine	https://www.epa.gov/cwa-methods/whole-effluent-toxicity-methods ; 40 C.F.R. § 136.3, Table 1A	
		<u>Radiochemical Methods</u>	https://www.epa.gov/cwa-methods/approved-cwa-radiochemical-test-methods ; 40 C.F.R. pt. 136 ;	
		<u>Industry-Specific Methods</u>	40 C.F.R. pts. 401 – 503 (1, 2) https://www.epa.gov/cwa-methods/approved-industry-specific-cwa-test-methods	
	Other Clean Water Act Methods	<u>Chemical Methods</u>	https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical	
		<u>Microbial Methods</u>	https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-microbiological	
		<u>Biosolids</u>	https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-biosolids	
	Unapproved	<u>Environmental Chemistry Methods</u>	https://www.epa.gov/pesticide-analytical-methods/environmental-chemistry-methods-ecm-index-0-9	
	Solid Waste and Emergency Response	Approved	<u>SW-846 Methods</u>	https://www.epa.gov/hw-sw846/sw-846-compendium
		Unapproved	<u>Validated Methods</u>	https://www.epa.gov/hw-sw846/validated-test-methods-recommended-waste-testing

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