A Toolkit for Iowa Row Crop Farmers Preparing for an Audit for the Leading Harvest Standard 2020

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The Leading Harvest Standard 2020is a third-party audited certification program that provides assurance for the sustainability of farmland management. Farmers can use the Leading Harvest Standard 2020 to certify farmland and make market claims about their management.

The Leading Harvest Standard 2020 is outcome-based, using non-numeric indicators that describe required management outcomes. **This provides farmers with the flexibility to apply the unique set of activities suited to their operation and achieve sustainable outcomes identified by the indicators.** This flexibility is possible because the program uses a credible verification system of independent third-party auditing. The purpose of this document is to help Iowa farmers enroll in the Leading Harvest Standard 2020.

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Step 1: Understand the Leading Harvest Standard 2020

How is the Leading Harvest Standard 2020 organized?

You should focus on the Indicators of the Leading Harvest Standard 2020 because this is what auditors focus on. However, the Leading Harvest Standard 2020 has four levels, starting with Principles and followed by Objectives, Performance Measures, and Indicators, which provide increasing detail about how to achieve conformance to the Leading Harvest Standard 2020. You choose the conformance evidence you want to demonstrate your conformance with each Indicator. When you are in conformance with all Indicators for an Objective, then you are in conformance with the Objective. Indicators are not assessed if they are not relevant to an operation. For example, an audit team would not assess a farm for Indicator 3.1.3 (Water Conservation) if the operation does not irrigate crops.

Table 1. The organization of the Leading Harvest Standard 2020, including Principles, Objectives, Performance Measures, Indicators.

Level	Definition
Principle	A statement that expresses the **vision and direction** for sustainable agriculture with respect to one or more environmental, social, and economic topics.
Objective	A fundamental **goal** of sustainable agriculture with respect to one or more of the **Principles**.
Performance Measure	A statement that identifies key **criterion or criteria** for assessing farm performance and compliance with an **Objective**.
Indicator	A specific **metric** that provides qualitative or quantitative information about farm performance that is integral to assessing conformance to a standard's **Performance Measures**.
Conformance Evidence	An indication of activities that demonstrate how your operations have met requirements and outcomes described by an **Indicator.** This may include documents, statements, measurements, other verifiable information, and/or observations of actions, practices, technology, and conditions.

What is conformance evidence?

Conformance evidence is evidence of activities that demonstrate how your operations have met Indicator requirements. This may include documents, statements, measurements, other verifiable information, and/or observations of actions, practices, technology, and conditions. **You choose the conformance evidence that you want to present to the audit team**. You may need to explain how the conformance evidence is sufficient for meeting the Indicator requirements. Thus you can choose how to demonstrate how your farm achieves conformance without resorting to a program checklist. **The audit team verifies the conformance evidence and makes a determination as to whether it sufficiently meet the requirements described by the Indicator**.

What is the role of the audit team?

The audit team assesses conformance to the standard by reviewing conformance evidence provided by you. They focus on whether you are in conformance with Indicators and Indicator conformance rolls up into conformance with Performance Measures, Objectives, and the entire standard. They assess whether evidence is sufficient to conform to the requirements described by the indicator. They also take into consideration the size of the operation, the cropping system, and regional agricultural best management practices.

What are common examples of conformance evidence?

Five common types of conformance evidence with farming examples are described in Table 2. They can overlap. For example, a nutrient management plan (*documentation* evidence) may describe field practices (*policy/practice* evidence) and may be shared among employees and service providers (e.g., *communication* evidence).

Table 2. Five types of conformance evidence

Type: Definition	**Examples of conformance evidence**	
Policies/Practices: farm management and agricultural policies and practices (including evidence of the establishment of roles and responsibilities) that provide information about your stewardship activities and performance.[1]	• a description of practices by a Program User • field activities observed in the field or demonstrated (e.g., presence of cover crop stubble in the spring indicates cover cropping practices) • documentation (e.g., vendor invoices for pesticide applications or CAPEX activities)	
Communication/Training: internal and/or external communication activities and materials describing professional agricultural training.	**Communication:** • a description of communication • emails • memos • electronic or printed records • signage	**Training** • a description of employee training • resumes and C.V.s • training certificates • professional licenses (e.g., pesticide applicator's license) • post-secondary diplomas (e.g., 2 and 4 year degrees) • professional certificates (e.g., Accredited Ag. Consultant; Certified Crop Advisor, Professional Agronomist, Professional Crop Consultant, and Professional Soil Scientist; NRCS Certified Technical Service Provider)
Documentation: relevant printed and/or electronic materials describing farm management activities.	• a description of key documentation • emails • standard operating procedures • vendor proposals and invoices for installations, goods, and/or other services • monitoring and key performance indicator data • documentation or plans for key stewardship activities (e.g., CAPEX proposals, nutrient management plans) • permitting documents (e.g., permits and applications submitted to government agencies required for farm activities) • legal agreements • maps or GIS layers • documents establishing participation in voluntary sustainability programs[2]	

[1] The Leading Harvest Standard 2020 Objectives and Performance Measures can serve in effect as organizational policies for Program Users who have adopted the Leading Harvest Standard 2020.

[2] This can include enrollment in USDA NRCS; other federal, state, and local voluntary programs; participation in supply chain programs aimed at improving agricultural stewardship; partnerships with co-ops and other organizations, including local and regional conservation organizations; and crop certification programs (e.g., GLOBALG.A.P., national or regional crop certification programs).

	• training documents • job descriptions • corrective actions documentation (e.g., email) used to remedy non-conformance with organizational or Leading Harvest Standard 2020 objectives.
Monitoring: audits or routine reviews of practices, training, input use (e.g., water, fertilizers, crop protectants), resource use, and impacts.	• a description of monitoring • printed or electronic forms or data • field survey forms • performance reviews • vendor invoices • harvest records • input records
Key Performance Indicators (KPIs): quantitative and qualitative measurements of resource use and activity impacts used to evaluate progress toward a goal. They may include proxy KPIs, such as annual energy costs which might be reviewed annually as a proxy for tracking annual energy use.	• A description of a list of KPIs used in decision making • input records • harvest records • performance reviews • soil sampling records

Can I use participation in other programs as conformance evidence?

Yes, you may use participation in other programs as conformance evidence for Indicators. This may include required reports and completed forms needed for legal compliance (e.g., USDA FSA and NRCS program participation, state permits) and for active participation in voluntary programs (e.g., research projects, local programs, supply chain surveys, industry programs). Evidence may include descriptions of programs, paperwork indicating program enrollment and related activities, reviews or audits, trainings, and program checklists.

Step 2: Understand the Indicators

Are there specific terms or phrases that are key to understanding the Indicators?

There are key terms that can help you understand where an Indicator is applied. Most indicators for Objectives 2 through 8 apply to field operations and may be limited to *farmland* (e.g., the whole farm), only *agricultural land* (e.g., land used directly or indirectly in the production of *agricultural products*), or only *cropland* (e.g., land used directly in the production of agricultural products). Key phrases in Table 3 can also help you identify the evidence needed to achieve conformance with the Leading Harvest Farmland Management Standard 2020.

Table 3. Key phrases for interpreting the Leading Harvest Standard 2020 Indicators.

Key Phrase	A description of required conformance evidence
A *process* for…	A process is *a purposeful series of practices or routines (formal or informal)*. Having a process requires thoughtfulness that exceeds haphazard application of practices and activities. You will have to demonstrate that you have a process with a routine and purpose. The order and application of specific practices or activities could vary each year or between from applications. It does not require a SOP document or a policy document.
A *program* to/for…	A program is an *organized system or set of activities*. A program requires a systematic level of activity and requires being more methodical and presenting more conformance evidence than a *process*. Written plans often can be used to describe an organized system or *program* for nutrient or water management. You will have to present evidence that describes an organized system or set of activities.
A written…	You will have to present written policies, statements, or agreements often with evidence of supporting actions to ensure employees understand and are able to implement written policy or agreements. These Indicators may include requirements unique to the Leading Harvest Farmland Management Standard 2020.
Application of *regional agricultural best management practices* to…	You will have to present evidence for application of practices. *Regional agricultural best management practices are practices or a combination of practices developed by land grant agricultural universities in a region considered to be an effective means (including technological, financial, environmental, social, and institutional considerations) of achieving a sustainable agriculture goal*. A region is a homogenous area with respect to crops produced, soil type, climatic conditions, crop association, and generally accepted farming practices. Evidence of practices may be visually seen directly or indirectly (e.g., completed practices) in the field, described by field workers, and/or supported by documentation or evidence of training and/or communication. Indicators with this language are easier to address than Indicators requiring a *process*.
Demonstration…	You will have to demonstrate how you have achieved the outcome described by the Indicator, which may include a commitment or action showing due diligence.
Application of…	You will have to provide evidence of application of practices and/or technologies. These may be described by field workers, supported by vendor invoices or CAPEX documents for equipment, or seen in the field.
Management of…	You will have to demonstrate sufficient management of topics described in the indicator to achieve the outcome specified by the Indicator. You may be asked to demonstrate consistency with *regional agricultural best management practices*.

Monitoring of…	You will have to demonstrate evidence of monitoring activities sufficient to achieve the outcome described in the Indicator. These activities might include monitoring documentation and printed or electronic monitoring data.
Participation individually or collaboratively…	You will have to demonstrate evidence of participation or membership in external efforts and awareness and understanding among appropriate employees.
Training…	You will have to demonstrate evidence of specific training identified by the Indicator. Evidence might include a description of training events, attendance records, and training content (printed and/or electronic materials).
Use of…	You will have to demonstrate evidence of activities or equipment described in the indicator. You may define the scope and what is sufficient to achieve outcome described in the Indicator, but it must be credible to the audit team.

What are Regional Agricultural Best Management Practices?

Regional agricultural best management practices (regional agricultural BMPs) are a key reference point for Objectives 2 through 5. All regions have land grant agricultural universities which have developed *regional agricultural BMPs* for managing soil health, water conservation, crop protection, energy use and air impacts, and climate change impacts. Most regions have at least one land grant university that has developed guidance information useful for addressing Objective 6 (Waste and Material Management), Objective 7 (Conservation of Biodiversity), and Objective 10 (Employees and Farm Labor).

Step 3: Tackling Common Gaps

Some gaps in conformance to the Leading Harvest Standard 2020 might be remedied easily and cheaply through better record retention, communication, and documentation, but don't overdo it. Excessive record keeping and documentation is no substitute for your compelling narrative which describes how you methodically apply good farmland stewardship to achieve conformance with the Leading Harvest Standard 2020. The following section describes common gaps seen with Iowa farmers and suggests strategies to address them.

Indicators Requiring Written Documents Unique to the Leading Harvest Standard 2020

Five Indicators require written documents (see Table 4 below). One such Indicator (Indicator 7.3.2, see below) does not currently apply in the U.S., but you should be able to explain why it does not apply to your farm. The four remaining Indicators require that you present auditors with written policies or statements. You should also be able to provide evidence that appropriate family workers and employees understand and are able to implement the concepts included in the written policy or statement.

Table 4. A summary of written statement Indicators and guidance for preparing written statements for each Indicator.

Indicator requiring written statements	A description of required conformance evidence
Indicator 1.1.1 Farmland Stewardship Commitment: A written commitment statement and list of goals that describes the sustainable agricultural stewardship of farmland.	• A commitment statement can be your mission statement. • Goals should include very general stewardship goals for the business (financial), environment, and society (e.g., positive impacts to employees and local community/neighbors). They should have a long time horizon, and provide overall direction. They should reflect what you hope your farm will accomplish long-term.
Indicator 7.3.2 Deforestation: (a) A written policy to demonstrate the Standard user's commitment to a zero deforestation policy that identifies the regions of application, relevant natural forest types, appropriate deforestation cut-off date(s) in areas with biome-specific…	• **Iowa farmers do not need to provide a written deforestation policy** because the U.S. does not have a (voluntary) deforestation protocol and lacks a cutoff date. • Deforestation protocols are voluntary programs. They have been developed for Canada and other countries to help prevent the conversion of forest to farmland. Farmland created by deforestation after a regional cut-off date cannot be enrolled in Leading Harvest Farmland Management Standard 2020. • You will be asked about this by the auditor.
Indicator 9.3.1 Local Community and Indigenous Peoples Policy: A written policy demonstrating a commitment to recognize and respect the rights of local communities and treaty rights of Indigenous Peoples.	• This can be a brief very simple statement describing your commitment to abide by local regulations and respect treaty rights of Native Americans. • You may still apply for local regulatory variances (e.g., code and ordinance exemptions) if enrolled in the Leading Harvest Standard 2020. • No Native American tribes currently have off-reservation treaty rights in Iowa and so a written statement does not create any new obligations to Native Americans.
Indicator 10.3.1 Sustainability Policy Commitment: Standard users shall provide a written policy demonstrating commitment to the Leading Harvest Standard that is communicated throughout the organization, particularly to facility and farm managers.	• This can be a brief very simple statement describing a simple commitment to abide by the Leading Harvest Principles, Objectives, Performance Measures, and Indicators. • The auditors will assess whether family workers and employees have seen the statement and understand its meaning.

Indicator 11.2.1 Written Compliance Policy: A written policy demonstrating commitment to comply with social laws, such as those addressing civil rights, equal employment opportunities, anti-discrimination and anti-harassment measures, workers' compensation and living wage, Indigenous Peoples' rights, workers' and communities' right to know, prevailing wages, workers' right to organize, and occupational health and safety.	• This can be a brief statement describing a simple commitment to comply with local, state, and federal social laws as they apply to farming in Iowa.[3]

Indicators for Objective 7. Conservation of Biodiversity

Indicators 7.1.1 Threatened and Endangered Species and 7.1.2 At-Risk Species

Threatened and Endangered Species: There are four ways for assessing which *Threatened and Endangered Species* may occur on your property:

1. Expert List for Property: If you participate in USDA NRCS and/or USDA FSA programs, then it is likely that the USDA has evaluated your farm for *Threatened and Endangered Species*. For USDA NRCS participants, documentation could be an *NRCS Summary Data for Biological Evaluation* form or NRCS-CPA-052 *Environmental Evaluation Worksheet*, which was completed by NRCS and evaluates project impacts on *Threatened and Endangered Species*. For USDA FSA participants, documentation could be an *FSA Biological Assessments* or an *FSA-850 Environmental Screening Worksheet* which was completed by NRCS and evaluates project impacts on *Threatened* and *Endangered Species*.

If you do not participate in USDA programs, then you can use one of the following methods to identify which *Threatened or Endangered Species* might occur on your property (most or all probably are not present):

2. Property List: Use the US Fish and Wildlife Service's on-line tool at https://ecos.fws.gov/ipac/location/index. With this tool, you can manually delineate your farm or any area online and the tool will provide a report about *Threatened* and *Endangered Species* on your farm or delineated area.
3. County List: You can use two web-based U.S. Fish and Wildlife Service tools to create a list of *Threatened or Endangered Species* in your county:
    a. Information for Planning and Consultation (IPaC) tool at https://ecos.fws.gov/ipac/location/index. Using the *Find Your Location* tab on the left, click on *Select by State or County* text. This will open a drop down box where you can enter your country and state and click on *OK*. Then use the *Confirm* tab on the left to click on a *Confirm* button. This will transfer to a page with a list of Threatened and Endangered species in your county.
    b. You can also use this web-based tool: https://ecos.fws.gov/ecp/ and input your county name and state.
4. County List: Using Appendix A of this document, you can review the *Habitat and Location Notes* of species on this list to winnow down the list of potential species that may need your attention on your farm.

At-Risk Species: All farmers can use Appendix A of this document to assess which *at-risk* (G1 and G2 species for *Indicator 7.1.2 At-Risk Species*) may be on your farm (see steps below).

You can winnow down a list of potential *Threatened or Endangered Species* and *at-risk* species by reviewing the Iowa species list in Appendix A and the information in the *Habitat and Location Notes* column to exclude potential species from your list.

[3] Iowa Farm Bureau has a helpful web page that helps farmers understand their regulatory environment: https://www.iowafarmbureau.com/Farmer-Resources/GovernmentPublic-Policy/Farm-Regulations-Assistance

Using Appendix A to Identify Possible Listed Species

Step 1. Exclude species that are not actionable because they may be extirpated or extinct, have not been detected recently, or unknown.

Step 2. Exclude species that are not know to occur within your county.

Step 3. Exclude species that use natural (not planted) forest, prairie remnant, cave, algific talus slope, stream, or river ecosystems **if these habitats are not present from your farm**. With an exception of farms in a few counties, you should end up with no listed species on your farm.

Step 4. Seek professional assistance from Iowa DNR to determine if they have records of the remaining species on or near your farm or whether your farm occurs in an area where *critical habitat* for a *Threatened or Endangered species* has been designated. With an exception of farms in a few counties, there should be no listed species on your farm.

Managing the Listed species

Step 5. **In the highly unlikely event that Iowa DNR has records of a listed species on your farm**, seek management guidance from USDA NRCS or Iowa DNR. For *at-risk species*, users are only required to "*protect known viable occurrences of at-risk species*." If an *at-risk species* is known to occur on your farm, ask USDA or DNR staff whether it is a viable population. Many species occurrences may not have enough individuals to support a viable population.

Additionally, the Iowa DNR has created management guidance for some of the listed species which can be found through a species search at: https://programs.iowadnr.gov/naturalareasinventory/pages/Query.aspx.

- If you select the species common or scientific name from the drop-down species name menus, the web site will open a species page that includes a county map.
- Near the top of the species page will be a clickable link, *Species Profile (PDF)* which will download a document describing management practices. Not all species have a Species Profile sheet.

Management for many listed species will have no or little impact on your farm practice

Indicator 7.2.2 Ecologically Important Sites

Ecologically Important Sites are sites of exceptional ecological importance including areas with critically imperiled or imperiled species or natural communities (species or natural communities with NatureServe global conservation status ranks of G1 or G2), rare natural communities or unique ecological landscape features. Appendix B of this document has a list of at-risk natural ecosystems and *Habitat and Location Notes* for each.

Reduce the Number of Possible Listed Natural Ecosystems

Step 1. Using Appendix B, disregard G1 or G2 natural ecosystems that may be extirpated or extinct, have not been detected recently, or unknown.

Step 2. Exclude G1 or G2 natural ecosystems that are not know to occur within your county. You may determine this using the *Habitat and Location Notes* column of Appendix B.

Step 3. Disregard G1 or G2 natural ecosystems **if these habitats types (e.g., forest) are not present from your farm**.

Step 4. Seek professional assistance from Iowa DNR to determine if they have records of the remaining G1 or G2 natural ecosystems on your farm. With an exception of farms in a few counties, there should be no G1 or G2 natural ecosystems on your farm.

Managing the Listed G1 or G2 Natural Ecosystems

Step 5. **In the highly unlikely event that Iowa DNR has records of a G1 or G2 natural ecosystems on your farm**, seek management guidance from USDA NRCS or Iowa DNR.

Additional Species Resources

At-risk Species and G1 and G2 Ecosystems: At-risk species and ecosystems can be identified using the NatureServe Explorer tool (you can explore this tool at https://explorer.natureserve.org/Search). The tool has a search engine allowing you to generate a list of at-risk species and ecosystems for each state and links to web pages containing additional information about each species or ecosystem. Some species pages have information describing whether agriculture is a threat to a species

Indicators for Objective 8. Special Sites

Special Sites "include **geologically unique** or **culturally important features** that are recognized regionally or nationally or by Indigenous Peoples" (Indicator 8.1.1). They are very uncommon in agricultural landscapes. Landowners are often already aware of Special Sites and make efforts to conserve them. Culturally important features are documented areas such as cemeteries and Native American sacred sites and archeological sites. Unique geological formations may include waterfalls, cliffs, caves, and other unusual formations. In Iowa, this may include algific talus slopes in the Driftless Area which are rocky calcareous areas on moderate to steep slopes; or caves in Clayton, Dubuque, Fayette, Floyd, Jackson, Jones, and Winneshiek counties. You will need to identify such sites and then apply appropriate measures to conserve them when they are present.

Step 1: Identify whether Special Sites Occur on your Farm (Indicator 8.1.1)

Action: You should use available resources to determine whether Special Sites exist on your farm. If you are enrolled in a USDA FSA program, then the review by FSA staff included use of an *FSA-850 Environmental Screening Worksheet* which covered cultural and historical resources, including archeological sites. If you are enrolled in a USDA NRCS program, then the review by NRCS staff included use of an *NRCS-CPA-52 Environmental Screening Worksheet*, which covered cultural and historical resources, including archeological sites.

If no Special Sites are identified to occur on your farm through your efforts or based on the *NRCS-CPA-52 Environmental Screening Worksheet* or *FSA-850 Environmental Screening Worksheet*, then briefly **document this result search, skip Step 2, and share your findings with the auditor**. If Special Sites are identified, then go to Step 2 and identify "management of identified Special Sites in a manner that recognizes their unique qualities."

Resources for Identifying Special Sites in Iowa

Culturally Important Features: Iowa has an online historic sites database with cemeteries and Native American sites that includes publically accessible data: http://isugisf.maps.arcgis.com/apps/Viewer/index.html?appid=3117ad0729b046a697ae5ba82c9b8cfa.

Geologically Unique Features: Typically you would already know about unique geological features on your farm but you can check with a state geologist if you are uncertain. Typically they occur on inoperable areas of your farm but excessive use from recreationists and other may need to be managed. If you don't know how to manage these sites, you can contact the Iowa state geologist and they can provide you with guidance about how to manage unique geologic features. Contact information for the Iowa state geologist can be found at: https://www.iihr.uiowa.edu/blog/2018/08/03/schilling-named-state-geologist-of-iowa/?doing_wp_cron=1619158659.3412389755249023437500

Step 2: Managing Special Sites for Unique Values (Indicator 8.1.2)

Action: If Special Sites are identified, then identify "management of identified Special Sites in a manner that recognizes their unique qualities." Some cultural sites can be managed by leaving them undisturbed. Cemeteries or archeological sites may be degraded by trees and so vegetation management (tree removal, and annual mowing, bush hogging, or brush saw treatment) may be necessary to maintain these sites.

Resources for Managing Cultural Features in Iowa

The Office of the (Iowa) State Archaeologist. 2021 A Guide for Landowners. The Office of the (Iowa) State Archaeologist, Iowa City, IA. https://archaeology.uiowa.edu/guide-landowners or https://archaeology.uiowa.edu/print/98 (both were accessed 4 23 2021).

The Iowa State Archeologist can also provide guidance about how to appropriately manage cemeteries, Native American sacred sites, and other significant archeological sites (contact information: https://archaeology.uiowa.edu/staff).

Resources for Managing Geological Features in Iowa

There are no practical references for managing unique U.S. geological features. Useful information for **inland outcrops only** which could be applied to waterfalls, cliffs, caves, etc. can found in Prosser et al. (2006).[4] **Unfortunately, Prosser et al. (2006) includes management guidance for many geological features NOT considered Special Sites by the Leading Harvest Standard 2020**. A summary of relevant management guidance from Prosser et al. (2006) for geological features is listed here:

- Avoid developments in front of or on cliffs
- Avoid installation of engineering structures on geological features
- Avoid dumping and infilling of features that have natural depressions (e.g., cave entrances)
- Promote good visitor practices to minimize soil and rock damage and erosion
- Promote good collecting practices for minerals and fossils which use naturally eroded materials
- Place developments such as roads, paths, equipment storage and passage, and buildings away from geological features

Share key documentation evidence with audit team in advance

You can reduce your time spent on the audit team visit by sharing key documentation evidence with them. This greatly helps the audit team understand your conformance with the Leading Harvest Standard 2020. This will allow you and the audit team to largely focus on Objectives 2 through 6 in the field and assess the application of regional agricultural BMPs.

[4] Prosser, C., M. Murphy and J. Larwood. 2006. Geological conservation: a guide to good practice. English Nature, Peterborough, United Kingdom (accessed 4/23/2021 at: http://publications.naturalengland.org.uk/file/84039)

Step 4: Prepare for the Audit Team Visit

Understand the Audit Process

The audit team will assume all shared information is **confidential** and typically will organize a kickoff call, an onsite-visit, and a follow-up call:

Kick-off call: The audit team will likely kick-off an audit by hosting an introductory phone or video call to talk through expectations and scheduling, about your operation, about how the farm operation addresses Objectives 1 and 8 through 12, and about documentation that you are willing to share with the audit team. By understanding the operation, the audit team can set audit expectations appropriate to the size of the operation, the cropping system, and regional agricultural best management practices. This call will likely generate significant amounts of conformance evidence. The audit team will request documentation for review before visiting the farm. By sharing documentation, farmers will be providing much conformance evidence which will reduce the length of the on-farm site visit.

Onsite visit: The on-farm site visit will be scheduled at the convenience of the farmer and will focus on Objectives 2 through 6 many of which involve the application of regional agricultural BMPs. It will likely include visit to office space, equipment and storage buildings, cropland, and other areas of the farm.

Follow-up call: A follow-up call is used to identify improvement areas (if any), a remedial time table (if necessary), and types of evidence to demonstrate conformance of improvement and submit for certification.

Be knowledgeable about regional agricultural BMPs

You will be well prepared for Objectives 2 through 6 and parts of other Objectives if you are familiar with regional agricultural BMPs in your state or region and understand when and why they should and should not be applied to your operations. You will not be tested on your knowledge of regional agricultural BMPs but you should know when your operation may be differing from them and be able to explain why. The following links provide information resources for regional agricultural BMPs for selected Objectives, Performance Measures, and Indicators:

Objective 2. Soil Health and Conservation:

https://store.extension.iastate.edu/Topic/Crops/Soil-Management-and-Fertility?S=0&A=0&F=0

Objective 3. Water Resources

- Performance Measure 3.1. Water Use:
  https://water.unl.edu/category/agricultural-irrigation
  https://www.twdb.texas.gov/conservation/BMPs/Ag/doc/AgMiniGuide.pdf
- Performance Measure 3.2. Water Quality:
  https://store.extension.iastate.edu/Topic/Farm-Management/Water-Resources-and-Water-Quality?S=0&A=0&F=0
  https://wrl.mnpals.net/islandora/object/WRLrepository%3A2955/datastream/PDF/view

Objective 4. Crop Protection

- Performance Measure 4.1. Integrated Pest Management:
  https://store.extension.iastate.edu/Topic/Crops/Integrated-Pest-Management?S=0&A=0&F=0
  https://store.extension.iastate.edu/Topic/Crops/Insect-Management
  https://store.extension.iastate.edu/Topic/Crops/Pesticides
  https://store.extension.iastate.edu/Topic/Crops/Weeds-and-Weed-Control
  https://store.extension.iastate.edu/Topic/Crops/Plant-Diseases-in-Crops-Forages-Small-Grains

- Performance Measure 4.2. Crop Protectant Management:
  https://store.extension.iastate.edu/Topic/Crops/Pesticide-Safety?S=0&A=0&F=0
  https://store.extension.iastate.edu/Topic/Crops/Pesticides-Environment

Objective 5. Energy Use, Air Quality and Climate Change

- Performance Measure 5.1 Agricultural Energy Use and Conservation:
  https://store.extension.iastate.edu/Topic/Crops/Energy?S=0&A=0&F=0
  https://store.extension.iastate.edu/Topic/Crops/Equipment-and-Machinery?S=0&A=0&F=0
- Performance Measure 5.2 Air Quality:
  https://store.extension.iastate.edu/FileDownload.ashx?FileID=3116
- Performance Measure 5.3 Climate-Smart Agriculture:
  https://store.extension.iastate.edu/Topic/Crops/Climate-and-Agriculture?S=0&A=0&F=0

Objective 6. Waste and Material Management

- Performance Measure 6.1 Management of Waste and Other Materials:
  https://cdn.shopify.com/s/files/1/0145/8808/4272/files/G3717-E.pdf
- Performance Measure 6.2 Food and Agricultural Waste Resource Recovery:
  https://store.extension.iastate.edu/Topic/Farm-Management/Handling-and-Storage?S=0&A=0&F=0
  https://wrl.mnpals.net/islandora/object/WRLrepository%3A2955/datastream/PDF/view

Objective 7. Conservation of Biodiversity

- Indicator 7.2.3 Cropland for Wildlife Habitat:
  https://store.extension.iastate.edu/Topic/Environment/Wildlife-and-Natural-Resources?S=0&A=0&F=0

Objective 9. Local Communities

- Indicator 9.2.1 Community Engagement:
  https://store.extension.iastate.edu/Topic/Farm-Management/Rural-Sociology?S=0&A=0&F=0
- Indicator 9.4.1 Public Health and Safety
  https://store.extension.iastate.edu/Topic/Farm-Management/Farm-Safety?S=0&A=0&F=0
  https://store.extension.iastate.edu/Topic/Crops/Pesticide-Safety?S=0&A=0&F=0
  https://store.extension.iastate.edu/Topic/Crops/Pesticides-Environment

Review your conformance evidence and identify gaps

You can identify any gaps by cataloging conformance evidence. You can start by identifying all Indicators that do not apply to your operation (e.g., all Indicators under Objective 13). A review of Table 3 can help you understand what conformance evidence is necessary for many Indicators. You might discover that you have more conformance evidence and have addressed more Indicators better than you thought when you began. Participation in other programs, knowledge of your regulatory environment and regional agricultural BMPs, and business documentation will generate substantial conformance evidence for many Indicators:

Your participation in other programs (e.g., government, regulatory, voluntary, research, supply chain, or industry) can provide an abundance of conformance evidence. Evidence of program participation activities may include program enrollment, participation, and/or permit documentation, reviews or audits, trainings, and program checklists. For example, enrollment in USDA FSA programs may require a HEL analysis and plan which may serve as conformance evidence for Indicator 2.2.1 (Cropland Soil Management) and Indicator 2.2.2 (Degradation of Agricultural Lands) as well as a wetlands analysis and plan which may serve as conformance evidence for Indicator 7.2.1 (Conservation of Native Habitats and Natural Communities).

Your farming regulatory may serve as conformance evidence (e.g., current use land taxation laws, county weed commissions, water quality regulations, OSHA regulations). You may use your understanding of farming regulations to describe the regulatory environment as conformance evidence for some Indicators. For example, all states require the use of licensed pesticide applicators which can be used as conformance evidence for all Indicators under Objective 4 (Crop Protection), and Indicators 3.2.1 (Input Application on Agricultural Lands), 3.2.2 (Water Quality Protection), and 6.1.3 (Management of Agricultural Chemicals and Other Materials).

Applying your knowledge of **regional agricultural BMPs** will also help provide conformance evidence for Indicators for Objectives 2 through 6. It will help you to explain why you apply some regional agricultural BMPs and not others.

You may have an abundance of **business documentation** evidence in the form of invoices for services and inputs, contracts, or project plans, which can be applied to a number of Indicators.

Appendix A.
Status of listed Species ("at-risk" and Threatened and Endangered species) for Iowa and habitat and location notes (from 9/27/2021)

Species Group (Fine)	Common Name	Scientific Name	Global Rank	U.S. Endangered Species Act Status	Habitat and Location Notes	View on NatureServe Explorer
Birds	**Whooping Crane**	Grus americana	G1	Endangered	Reginally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102973/Grus_americana
Mammals	**Northern Long-eared Bat**	Myotis septentrionalis	G1	Threatened	Hibernates in caves, secure in IA. Bat caves occur in Clayton, Dubuque, Fayette, Floyd, Jackson, Jones, and Winneshiek counties	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102615/Myotis_septentrionalis
Mammals	**Indiana Myotis**	Myotis sodalis	G2	Endangered	Hibernates in caves, uses forests. Bat caves occur in Clayton, Dubuque, Fayette, Floyd, Jackson, Jones, and Winneshiek counties	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.100428/Myotis_sodalis
Mammals	**Tricolored Bat**	Perimyotis subflavus	G2		Hibernates in caves, uses forests. Bat caves occur in Clayton, Dubuque, Fayette, Floyd, Jackson, Jones, and Winneshiek counties	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102580/Perimyotis_subflavus
Fishes	**Alabama Shad**	Alosa alabamae	G2		Possibly Extirpated	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.104407/Alosa_alabamae
Fishes	**Pallid Sturgeon**	Scaphirhynchus albus	G2	Endangered	Mississippi River near Keokuk, Iowa	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.103033/Scaphirhynchus_albus

Species Group (Fine)	Common Name	Scientific Name	Global Rank	U.S. Endangered Species Act Status	Habitat and Location Notes	View on NatureServe Explorer
Fishes	**Topeka Shiner**	Notropis topeka	G3	Endangered	Uses primarily cut-off channels and oxbows that are seasonally flooded. Restricted to the North Raccoon River and its tributaries, with smaller populations in the Boone, Rock and Little Rock rivers. See map of listed counties and critical habitat in *Topeka Shiner Range and Designated Critical Habitat* in Iowa document in link.	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.105369/Notropis_topeka https://www.fws.gov/midwest/endangered/fishes/topekashiner/pdf/IowaTshinerRangeMap.pdf
Freshwater Mussels	**Higgins Eye**	Lampsilis higginsii	G1	Endangered	freshwater streams and rivers, Allamakee County	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.112888/Lampsilis_higginsii
Freshwater Mussels	**Scaleshell**	Leptodea leptodon	G1	Endangered	Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.115603/Leptodea_leptodon
Freshwater Mussels	**Orangefoot Pimpleback**	Plethobasus cooperianus	G1	Endangered; Experimental population, non-essential	Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.120557/Plethobasus_cooperianus
Freshwater Mussels	**Pyramid Pigtoe**	Pleurobema rubrum	G2		Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.107905/Pleurobema_rubrum
Freshwater Mussels	**Fat Pocketbook**	Potamilus capax	G2	Endangered	Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.109746/Potamilus_capax

Species Group (Fine)	Common Name	Scientific Name	Global Rank	U.S. Endangered Species Act Status	Habitat and Location Notes	View on NatureServe Explorer
Freshwater Mussels	**Winged Mapleleaf**	Quadrula fragosa	G1	Endangered	Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.111959/Quadrula_fragosa
Freshwater Snails	**Anthony's Riversnail**	Athearnia anthonyi	G1	Endangered; Experimental population, non-essential	Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.111216/Athearnia_anthonyi
Freshwater Snails	**Moss Pyrg**	Marstonia scalariformis	G1		Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.115792/Marstonia_scalariformis
Freshwater Snails	**Sandbar Pebblesnail**	Somatogyrus depressus	G2		Cherokee Co. (Cherokee), Clinton Co. (Clinton), Dickinson Co. (northeast of Okoboji), Dubuque Co. (Dubuque), Emmet Co. (Estherville, Des Moines River near Estherville), Hardin Co. (Eldora; Iowa River in Eldora), Humboldt Co. (Dakota City), Johnson Co. (Iowa City), Muscatine Co. (Muscatine), Scott Co. (Davenport);	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.118391/Somatogyrus_depressus
Terrestrial Snails	**Pleistocene Catinella**	Catinella exile	G2		Found only from IA fens (alkaline grassy sedge wetlands)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.113716/Catinella_exile
Terrestrial Snails	**Slope Ambersnail**	Catinella wandae	G2		May be extirpated	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.114661/Catinella_wandae

Species Group (Fine)	Common Name	Scientific Name	Global Rank	U.S. Endangered Species Act Status	Habitat and Location Notes	View on NatureServe Explorer
Terrestrial Snails	**Pleistocene Disc**	Discus macclintocki	G1	Endangered	Clayton, Dubuque, Fayette and Jackson counties, half of sites protected	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.111599/Discus_macclintocki
Terrestrial Snails	**Marbled Disc**	Discus marmorensis	G1		Not recently seen in IA	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.106733/Discus_marmorensis
Terrestrial Snails	**Chittenango Ambersnail**	Novisuccinea chittenangoensis	G1	Threatened	Possibly Extirpated	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.114563/Novisuccinea_chittenangoensis
Terrestrial Snails	**Bluff Vertigo**	Vertigo meramecensis	G2		Iowa occurrence sites are protected: 5 are state owned, 2 are in national parks and 2 are Fish and Wildlife Service lands	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.119513/Vertigo_meramecensis
Amphipods	**Iowa Amphipod**	Stygobromus iowae	G2		Possibly Extirpated	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.118205/Stygobromus_iowae
Bumble Bees	**Variable Cuckoo Bumble Bee**	Bombus variabilis	G1		Pop collapse makes IA status uncertain	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.819626/Bombus_variabilis
Leafcutter Bees	**a leafcutter bee**	Megachile dakotensis	G2		May occur on Midwest Dry Sand Prairie	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.882198/Megachile_dakotensis

Species Group (Fine)	Common Name	Scientific Name	Global Rank	U.S. Endangered Species Act Status	Habitat and Location Notes	View on NatureServe Explorer
Leafcutter Bees	**Robust Sunflower Leafcutter Bee**	Megachile fortis	G2		No records after 1990	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.882203/Megachile_fortis
Leafcutter Bees	**a leafcutter bee**	Megachile integra	G2		Found on sandy soils, Luisa County, IA	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.882199/Megachile_integra
Leafcutter Bees	**a leafcutter bee**	Megachile rugifrons	G2		Prairie habitats, one IA record	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.882191/Megachile_rugifrons
Butterflies and Skippers	**Arogos Skipper**	Atrytone arogos	G2		A 2018 IA resurvey of 18 historical site reported seeing no individuals	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.106956/Atrytone_arogos
Butterflies and Skippers	**Dakota Skipper**	Hesperia dacotae	G2	Threatened	Extirpated in 1990s, last seen Cayler Prairie in northern IA	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.119247/Hesperia_dacotae
Butterflies and Skippers	**Poweshiek Skipperling**	Oarisma poweshiek	G1	Endangered	Restricted to native tall-grass prairie, Calhoun Co.	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.116340/Oarisma_poweshiek
Butterflies and Skippers	**Rattlesnake-master Borer Moth**	Papaipema eryngii	G1		Probably extirpated	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.111888/Papaipema_eryngii
Moths	**Whitney's Underwing**	Catocala whitneyi	G2		Present on a number of prairie preserves such as Sioux City prairie, Iowa	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.112296/Catocala_whitneyi

Species Group (Fine)	Common Name	Scientific Name	Global Rank	U.S. Endangered Species Act Status	Habitat and Location Notes	View on NatureServe Explorer
Aquatic Invertebrates - Stoneflies	**Two-lined Stone**	Perlesta golconda	G2		Occurs in streams in the Rolling Loess Prairies, Loess Flats and Till Plains, in the Cedar River in Cedar Co.; Little Sioux River in Dickinson Co.; and Des Moines River in Van Buren Co.	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.890095/Perlesta_golconda
Aquatic Invertebrates - Stoneflies	**Pawnee Stone**	Perlesta xube	G2		Occurs in streams in the Loess Flats and Till Plains and Rolling Loess Prairie in Johnson (Clear Creek) and Lee (Lick Creek) Cos.	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.116405/Perlesta_xube
Damselflies	**Sioux Snaketail**	Ophiogomphus smithi	G2		Buchanan and three adjacent counties near Waterloo in eastern Iowa	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.107024/Ophiogomphus_smithi
Flatworms	**Pink Planarian**	Kenkia glandulosa	G2		Little known	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.117210/Kenkia_glandulosa
Springtails	**a cave obligate mite**	Robustocheles occulta	G2		Associated with caves	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.114067/Robustocheles_occulta
Springtails	**a cave obligate mite**	Ameritulla hades	G2		Associated with caves	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.110586/Ameritulla_hades
Springtails	**a cave obligate mite**	Onychiurus gelus	G2		Associated with caves	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.113342/Onychiurus_gelus

Species Group (Fine)	Common Name	Scientific Name	Global Rank	U.S. Endangered Species Act Status	Habitat and Location Notes	View on NatureServe Explorer
Springtails	**a cave obligate springtail**	Pygmarrhopalites dubius	G2		Associated with caves	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.115547/Pygmarrhopalites_dubius
Orchids	**Oklahoma Grass-pink**	Calopogon oklahomensis	G2		Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.160275/Calopogon_oklahomensis
Orchids	**Eastern Prairie White-fringed Orchid**	Platanthera leucophaea	G2	Threatened	Mesic to wet prairies and wet sedge meadows, Decateur Co.	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.134537/Platanthera_leucophaea
Wildflowers	**Mead's Milkweed**	Asclepias meadii	G2	Threatened	Restricted to the Southern Iowa Drift Plain on mollisol soils	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.129673/Asclepias_meadii
Mosses	**Schimper's Earth Moss**	Acaulon schimperianum	G2		Bare patches on dry prairie, one record from Waubonsie State Park, Fremont County, SW Iowa	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.124508/Acaulon_schimperianum

Appendix B.
G1 and G2 Natural Ecosystems of Iowa and Notes regarding Habitat and Location.

Ecosystem Type	Ecosystem Common Name	Scientific Name	Global Rank	Habitat and Location Notes	View on NatureServe Explorer
Savannah	Central Bur Oak Openings	Quercus macrocarpa - (Quercus alba, Quercus stellata) / Andropogon gerardii Wooded Grassland	G1	Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.689942/Quercus_macrocarpa_-_(Quercus_alba_Quercus_stellata)_-_Andropogon_gerardii_Wooded_Grassland
Savannah	North-Central Bur Oak Openings	Quercus macrocarpa - (Quercus alba, Quercus velutina) / Andropogon gerardii Wooded Grassland	G1	Regionally Extinct	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.684248/Quercus_macrocarpa_-_(Quercus_alba_Quercus_velutina)_-_Andropogon_gerardii_Wooded_Grassland
Savannah	Northern Tallgrass Bur Oak Openings	Quercus macrocarpa Northern Tallgrass Wooded Grassland	G1	Records lacking in IA	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.683172/Quercus_macrocarpa_Northern_Tallgrass_Wooded_Grassland
Forest	White Pine - Red Pine Driftless Bluff Forest	Pinus strobus - (Pinus resinosa) Driftless Bluff Forest	G2	Very few occurrences in Driftless Area (Winneshiek, Allamake, Clayton, and Dubuque Counties), northeastern Iowa	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.686787/Pinus_strobus_-_(Pinus_resinosa)_Driftless_Bluff_Forest
Forest	Central Midwest White Oak - Mixed Oak Woodland	Quercus alba - (Carya ovata) / Carex pensylvanica Glaciated Woodland	G1	100s, if not 1000s of low quality examples in southern IA	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.684146/Quercus_alba_-_(Carya_ovata)_-_Carex_pensylvanica_Glaciated_Woodland

Ecosystem Type	Ecosystem Common Name	Scientific Name	Global Rank	Habitat and Location Notes	View on NatureServe Explorer
Forest	Chinquapin Oak Driftless Bluff Woodland	Quercus muehlenbergii - Quercus (alba, velutina) - (Juniperus virginiana) Driftless Bluff Woodland	G2	Occurs primarily on bluffs of large rivers in small patches. In Driftless Area (Winneshiek, Allamake, Clayton, and Dubuque Counties) of northeastern Iowa.	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.686525/Quercus_muehlenbergii_-_Quercus_(alba_velutina)_-_(Juniperus_virginiana)_Driftless_Bluff_Woodland
Forest	Central Tallgrass Bur Oak Mesic Woodland	Quercus macrocarpa / Andropogon gerardii - Hesperostipa spartea Woodland	G2	Possibly Extirpated	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.683064/Quercus_macrocarpa_-_Andropogon_gerardii_-_Hesperostipa_spartea_Woodland
Prairie	Midwest Mesic Tallgrass Prairie	Andropogon gerardii - Sorghastrum nutans - (Sporobolus heterolepis) - Liatris spp. - Ratibida pinnata Grassland	G1	Southern to western IA	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.683927/Andropogon_gerardii_-_Sorghastrum_nutans_-_(Sporobolus_heterolepis)_-_Liatris_spp_-_Ratibida_pinnata_Grassland
Prairie	Midwest Mesic Loess Tallgrass Prairie	Andropogon gerardii - Sorghastrum nutans - Hesperostipa spartea Loess Hills Grassland	G2	Loess Hills, southeast to western IA	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.687723/Andropogon_gerardii_-_Sorghastrum_nutans_-_Hesperostipa_spartea_Loess_Hills_Grassland
Prairie	Midwest Dry-Mesic Prairie	Schizachyrium scoparium - Sorghastrum nutans - Bouteloua curtipendula Dry-Mesic Grassland	G2	Small patches restricted to upper slopes and hillcrests	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.685966/Schizachyrium_scoparium_-_Sorghastrum_nutans_-_Bouteloua_curtipendula_Dry-Mesic_Grassland

Ecosystem Type	Ecosystem Common Name	Scientific Name	Global Rank	Habitat and Location Notes	View on NatureServe Explorer
Prairie	Loess Hills Little Bluestem Dry Prairie	Schizachyrium scoparium - Bouteloua curtipendula - Bouteloua hirsuta - (Yucca glauca) Grassland	G2	Restricted to south- and west-facing loess bluffs along the Missouri and Kansas rivers	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.684993/Schizachyrium_scoparium_-_Bouteloua_curtipendula_-_Bouteloua_hirsuta_-_(Yucca_glauca)_Grassland
Prairie	Midwest Dry Sand Prairie	Schizachyrium scoparium - Danthonia spicata - Carex pensylvanica - (Viola pedata) Sand Grassland	G2	Found on excessively well-drained soils	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.686291/Schizachyrium_scoparium_-_Danthonia_spicata_-_Carex_pensylvanica_-_(Viola_pedata)_Sand_Grassland
Prairie	Northern Mesic Big Bluestem Prairie	Andropogon gerardii - Hesperostipa spartea - Sporobolus heterolepis Grassland	G2	Northwestern Iowa on organic rich soils	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.683202/Andropogon_gerardii_-_Hesperostipa_spartea_-_Sporobolus_heterolepis_Grassland
Sedge wetland (grassy)	Northern Tallgrass Calcareous Fen	Carex prairea - Schoenoplectus pungens - Rhynchospora capillacea Fen	G2	Northwestern IA associated with calcium-rich springs	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.687546/Carex_prairea_-_Schoenoplectus_pungens_-_Rhynchospora_capillacea_Fen
Sedge wetland (grassy)	Upright Sedge Prairie Fen	Carex stricta - Valeriana edulis - Parnassia palustris Fen	G2	Found on wet seepage slopes often < 1 acre with peat soils	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.686204/Carex_stricta_-_Valeriana_edulis_-_Parnassia_palustris_Fen

Ecosystem Type	Ecosystem Common Name	Scientific Name	Global Rank	Habitat and Location Notes	View on NatureServe Explorer
Sedge wetland (grassy)	Central Wet-Mesic Tallgrass Prairie	Andropogon gerardii - Panicum virgatum - Helianthus grosseserratus Wet Meadow	G2	One occurrence in IA, found on poorly drained soils where surface water puddles after rain	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.686363/Andropogon_gerardii_-_Panicum_virgatum_-_Helianthus_grosseserratus_Wet_Meadow
Marsh	Sago Pondweed Submerged Wetland	Stuckenia pectinata - Ruppia maritima Aquatic Vegetation	G2	Brackish shallow water wetlands or exposed alkali salt flats	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.685070/Stuckenia_pectinata_-_Ruppia_maritima_Aquatic_Vegetation
Rocky grassland	Driftless Area Algific Talus	Impatiens pallida - Cystopteris bulbifera - Adoxa moschatellina Algific Talus Rock Vegetation	G2	Driftless Area (WinneSheik, Allamake, Clayton, and Dubuque Counties) of northeastern Iowa	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.688631/Impatiens_pallida_-_Cystopteris_bulbifera_-_Adoxa_moschatellina_Algific_Talus_Rock_Vegetation
Prairie	Central Tallgrass Prairie	Central Tallgrass Prairie	G1	Primarily occurs on deep, rich Mollisol soils	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.722976/Central_Tallgrass_Prairie
Marsh	Eastern Great Plains Wet Meadow, Prairie and Marsh	Eastern Great Plains Wet Meadow, Prairie and Marsh	G2	Found along creeks and streams, on hydric soils often with cattails	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.722972/Eastern_Great_Plains_Wet_Meadow_Prairie_and_Marsh