

4R Nutrient Stewardship Certification Manual

*Definitions and Requirements for Certification
of Nutrient Service Providers*

*Version 3
August 2024*



Introduction

The 4R Nutrient Stewardship Certification Program was created to encourage agricultural retailers and independent crop consultants “nutrient service providers” to work with farmers to adopt proven best practices using an approach that provides a science-based framework for plant nutrition management and sustained crop production, while considering specific individual farms’ needs. The Certification Program is voluntary and provides a consistent, recognized, and auditable standard for nutrient service providers within an identified geographic region. This approach provides a science-based framework for plant nutrition management and sustained crop production, while considering specific individual farms’ needs.

Terms and Definitions

4R: An approach for best nutrient management practices developed globally by the fertilizer industry (IPNI, 2012). 4R refers to the Right source, applied at the Right rate, at the Right time in the Right place. The philosophy of the 4R approach is to base nutrient recommendations and application on scientific principles, including site-specific considerations and adaptive management, with the goal of improved sustainability.

Adaptive Management: An ongoing process of developing improved practices for efficient production and resource conservation by use of participatory learning through continuous, systematic assessment. For the purposes of the Standard, the demonstration of adaptive management includes documented on-farm data showing reasonable expectation of improved crop yield without increased risk of harm to water quality.

Agricultural Retailer: An entity that sells agricultural services or inputs.

Agricultural Service Provider: An entity that provides agronomic services related to agricultural production.

Audit: Assessing conformance to a standard thorough review of documents and records. An audit is typically conducted at the site of the program participant and entails both document review and interview. Certification “effective date”.

Audit Report: The report that is prepared by a third-party.

Auditable Evaluation Criteria/Evidence Criteria: Normative statements that are used by auditors to evaluate compliance to a standard.

Certification: The process by which an accredited or authorized person or organization (often a third party) will follow established procedures to assess the conformity against an applicable performance standard. When adequate conformity to the standard has been verified, the accredited or authorized person or organization will attest in writing that a product, process or service conforms to specified requirements.

Certification Body: An independent, third-party organization that will follow established procedures for assessing conformity against an applicable standard to determine certification status of a product, process, or service (*see also* “Certification”).

Certified Professional: Professional certification that is recognized at a National or International level. For example: Certified Crop Adviser (CCA), USDA-NRCS Comprehensive Nutrient Management Plan (CNMP) Specialist, Certified Professional Agronomist (CPAg), or other relevant accreditation from the American Society of Agronomy or National Alliance of Independent Crop Consultants.

Cover Crop: A crop grown for the protection and enrichment of the soil, which is usually established between periods of regular crop production (e.g., grasses, legumes, clover).

Continuing Education Unit (CEU): One (1) CEU is defined as one (1) hour of quality contact time in training or other qualifying activity addressing the continuing education criterion. For the purposes of the Standard, a qualifying CEU must have been approved by a Certified Crop Adviser (CCA) state board.

Crop Adviser: An individual who provides advice to grower customers about crop management and inputs.

Eutrophication: The enrichment of water bodies with nutrients that stimulates proliferation of aquatic plant life.

Frozen Ground: For the purposes of this Standard, frozen ground is when soil conditions are such that tillage or nutrient incorporation and/or injection after application are not possible at the time of nutrient application, and will not be possible within the next 48 hours as a result of frozen conditions.

Grower Customer: Individual growers or farmers who are clients of the Nutrient Service Provider and receive either a nutrient recommendation from the Nutrient Service Provider, or have nutrients applied by the Nutrient Service Provider.

Maintenance Limit: The upper limit of the maintenance range, a range of soil test levels within which the recommended rate aims to replenish crop removal. Soil test levels above the maintenance limit receive progressively lower rate recommendations, usually declining to zero at a level 10 to 20 ppm above the maintenance limit (*for example, see Vitosh et al., 2012*).

Nutrient Management Plan: A plan detailing a set of practices designed to maximize nutrient use efficiency and minimize nutrient losses. The criteria for nutrient management plans vary according to state (*see NRCS, 2013*)

Nutrient Stewardship: Planning and implementation of practices designed to manage crop nutrition for improved efficiency of crop production systems and optimization of nutrient use (*see "4R"*).

Nutrient Service Provider: General term that refers to entities covered under the scope of the 4R Nutrient Stewardship Standard, including agricultural retailers, agricultural service providers, and certified professionals. For the purposes of the Standard, the relevant functions of Nutrient Service Providers are to provide nutrient recommendations and/or apply nutrients for grower customers.

Sensitive areas: Designation for an agricultural area which needs special attention and protection because of its landscape, wildlife or historic interest. Most common examples for the purpose of this program are: buffer zones, surface water, inlets, wells, areas of concentrated flow, and water bodies.

Setback: The spatial zone established between the edge of a crop to an identifiable feature such as a water body for the purpose of protecting the feature from adverse impacts.

Snow-covered: For the purposes of this Standard, snow-covered ground is when soil cannot be seen because of snow cover.

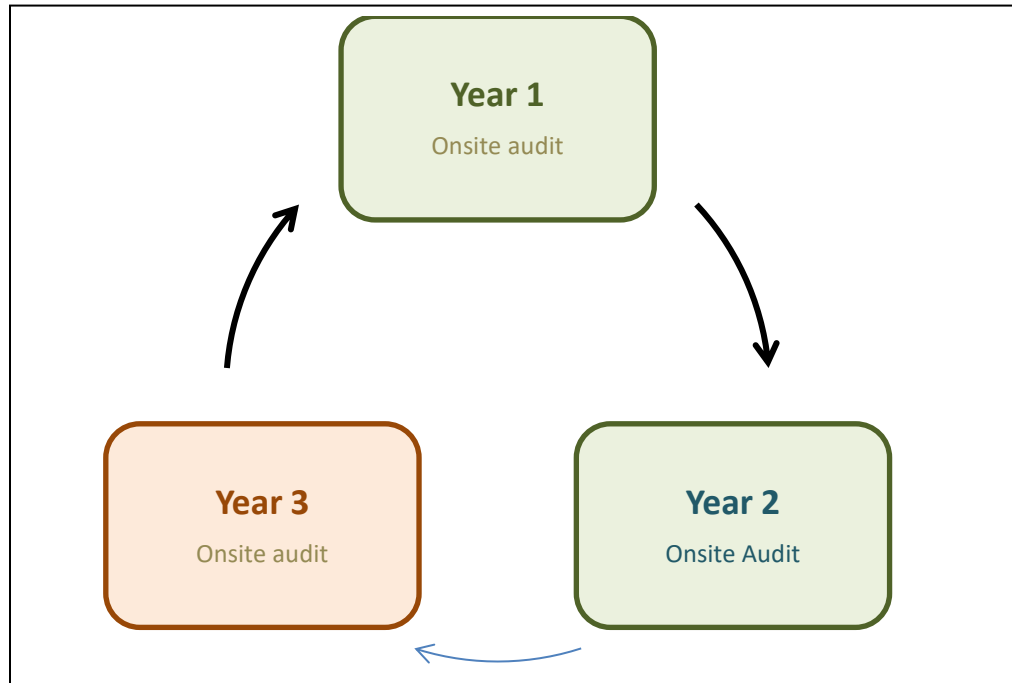
Standard: In general, the normative reference by which a decision to award certification is made. For the purposes of this document, when capitalized, "Standard" refers to the specific guidelines and references established in the 4R Nutrient Stewardship Program.

Variable Rate Application (VRA): Application of nutrient according to site-specific rate requirements, as opposed to uniformly throughout a field.

3 The Certification Process

The 4R Nutrient Stewardship Certification Program occurs on a 3-year certification cycle.

An overview of the 4R Nutrient Stewardship Certification Program cycle is shown below in FIGURE 1.



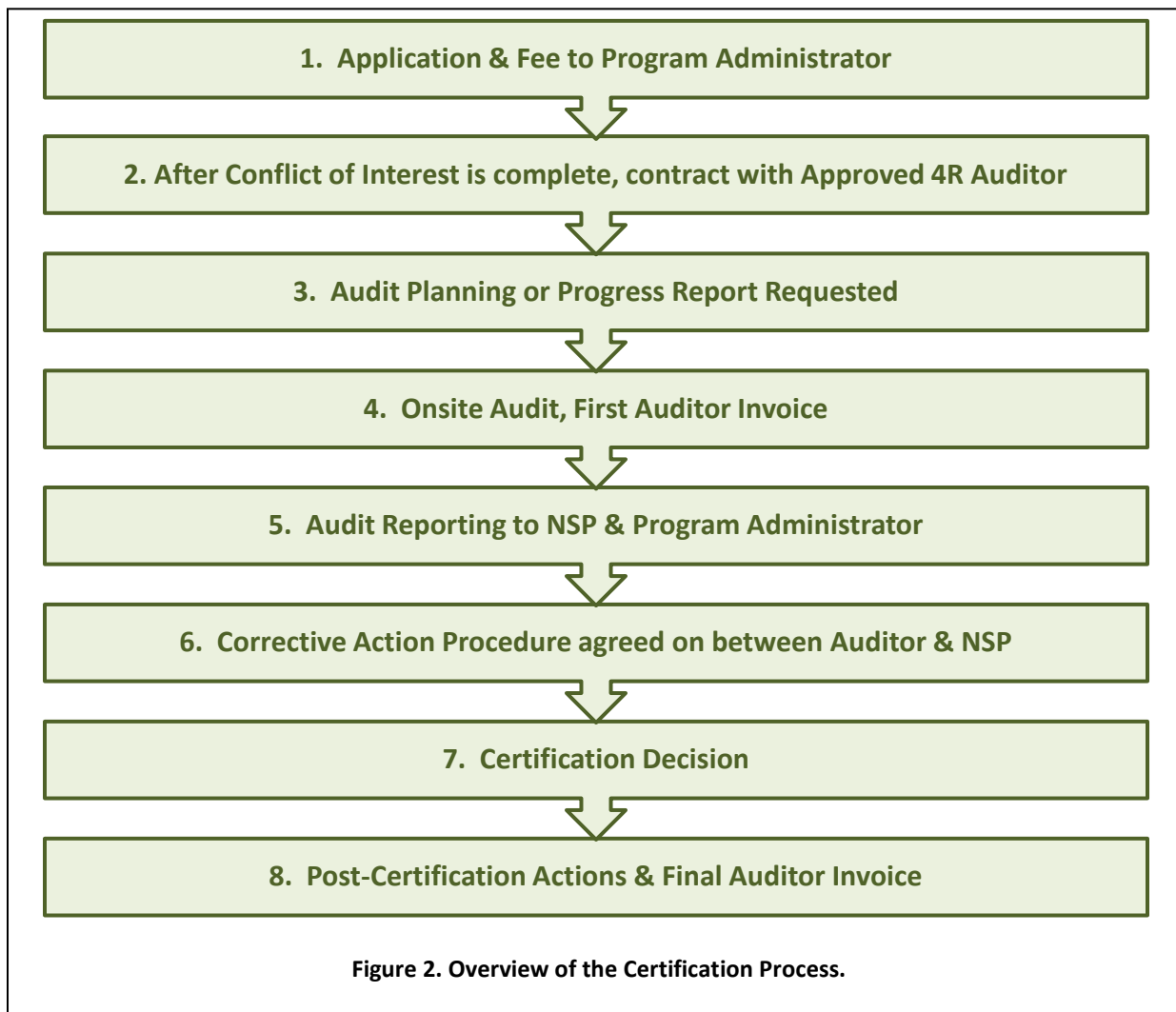
The 4R Minimum Standard includes a total of 30 Full-Service requirements, 18 applicable in Year 1, 10 that become applicable in Year 2, and 2 that become applicable in Year 3, as indicated in **Table 1** below. **Note that all 30 requirements are applicable for Full Service every year following Year 3.** Therefore, while Year 4 would represent the first year in the certification cycle, all 30 requirements would be applicable.

Audit Year	# Requirements	# Requirements (Cumulative)
1	18	18
2	10	28
3	2	30
4 (year 1)	30	30

Table 1. Summary of Number of 4R Standard Requirements by Audit Year.

During each year (rolling 12 months from previous date of audit) of the certification cycle, the audit process will follow the steps outlined in **Figure 2** on the next page.

Each step is explained further below following the illustration (Figure 2). *(see next page)*



1. Application & Fee to Program Administrator

The first step in the 4R Program is for the client to review the *4R IN Nutrient Stewardship Certification Standard* and to complete a *4R IN Nutrient Stewardship Certification Program Application*. Completed application forms and the **annual program registration fee** (fee to be submitted at time of Audit application) will be collected by the 4R Program who will confirm receipt and request any additional information as necessary. An **Individual NSP** (a single individual) shall pay \$100 annual program registration fee with an additional annual cost of \$50 per in-house NSP not to exceed \$600. A **Retail NSP** (refers to a single location of an operation which incorporates the work of multiple individuals) shall pay an annual program registration fee of \$900. An application form may only be required in the first year of the certification program. In subsequent years, the client may be sent a reminder by the 4R Program Administrator regarding the need to schedule an onsite audit in order to maintain certification status in the program.

2. After Conflict of Interest is complete, contract with Approved 4R Auditor

Following successful application, the Nutrient Service Provider will be directed to offer available dates for the audit to occur. After the Program Administrator completes the conflict of interest review, the 4R Program Administrator will send a standard quote to the Nutrient Service Provider. An auditor is selected for the Nutrient Service Provider based on conflict of interest review, schedule, and proximity. The 4R Program Administrator will then provide the application of the Nutrient Service Provider to the auditor. The auditor will contact the Nutrient Service Provider's main personnel contact to schedule a starting time for the audit. All auditor fees will be invoiced to the 4R Program Administrator. The

anticipated auditor fees are outlined in Table 3, below.

Table 3. Anticipated Audit Costs

Expenses Possibly Incurred with 4R Certification Audit	Fee
Onsite Audit, Report, and Corrective Action Request (if applicable)	\$900
Additional Expenses (i.e., mileage, lodging)	Not to exceed \$300
Additional time beyond a one-day audit and CAP review	\$75/hr

3. Audit Planning or Progress Report Requested

Upon receipt of the signed agreement, the auditor will send the client an audit plan. The audit plan will generally include an agenda of activities, a description of the scope of the audit, auditor contact information, and a list of documentation that should be sent in advance to the auditor or prepared for review at the time of the audit.

4. Guidance Documentation Required for 4R Certification

F- Full-Service Provider; R= Recommendation only Provider; A= Application only Provider

5. Audit and First Auditor Invoice

Onsite audits for the 4R certification cycle will consist of a visit to the office of the Nutrient Service Provider. The visit to the Nutrient Service Provider will primarily include a review of documentation necessary to evaluate the Nutrient Service Provider's performance against the *4R Nutrient Stewardship Certification Standard*. A list that outlines the Nutrient Service Provider's grower customers and number of acres per grower customer in each of the four categories (i.e., full service, recommendations only, application only, and other) will be used to evaluate the auditable criteria. In addition, the visit to the office of the Nutrient Service Provider will include interviews with staff responsible for nutrient recommendations and application. Upon completion of the audit, the Nutrient Service Provider will receive an invoice directly from the 4R Program Administrator not to exceed \$1,500 unless any additional audit time beyond the one-day audit is considered necessary. These additional fees will be discussed with the Nutrient Service Provider prior to billing.

The following is an example of additional audit time necessary: Nutrient Service Provider will not allow auditor to make copies of documentation to assist in the auditor's compilation of the audit report.

Note that the scope of the 4R Program audit covers a single branch location or operation of a Nutrient Service Provider entity. Separate audits are required for Nutrient Service Providers with separate branch operations.

Auditors will use the *4R IN Nutrient Stewardship Certification Program: Audit Checklist* in order to gather information during the audit.

6. Audit Reporting to NSP and Program Administrator

Following the audit, the auditor will prepare an audit report which details the findings of the audit and provides a summary of all non-conformities identified. Audit reports will be completed using the *4R Report Template*. The report will be finalized and sent to the client along with the Corrective Action Request (CAR) if any non-conformities were identified within 30 calendar days of the audit.

7. Corrective Action Procedure agreed on between Auditor & NSP

In order to become certified in the 4R Program, the Nutrient Service Provider must satisfy all applicable requirements in the *4R Nutrient Stewardship Certification Standard*. For example, a Nutrient Service Provider Full Service will need to satisfy all 18 of the Year 1 requirements for the first audit in the program. If any non-conformities were identified during the audit, the client will receive a Corrective Action Request (CAR) along with the audit report. The client will need to satisfactorily address the non-conformities by submitting a Corrective Action Plan (CAP) and supporting evidence in order to be considered for certification. Supporting evidence for each corrective action may include the following: specific timeline, lead person to implement, completed event agenda, documentation of change in procedure, or sample maps. The Nutrient Service Provider will complete the CAP within 30 calendar days of receiving the audit report. The client will do so by sending their completed Corrective Action Plan to the auditor for review, with any supporting evidence. Upon review, the auditor will determine whether the non-conformities were satisfactorily addressed and respond to the NSP within 10 days any additional supporting evidence that is needed. Once all non-conformities have been satisfactorily addressed the CAP will be considered “closed” based on the information provided. The costs for the audit and audit report and corrective action plan, if needed, is outlined in Table 3.

8. Certification Decision

In cases where no non-conformities were noted during the audit, the Certification Body may review the final version of the audit report and will issue a certification recommendation. In cases where non-conformities were reported, the Certification Body will review both the audit report and proposed corrective actions, once the CAP review has been closed by the auditor and will issue a certification recommendation. The Nutrient Stewardship Council will review the recommendation and make a final decision on certification. In cases where it is not possible to grant certification, the certification administrator and/or auditor will include a formal explanation in writing for the client. Certification decisions will be provided to the NSP no later than two weeks following the finalization of the audit report.

9. Post-Certification Actions & Final Auditor Invoice

Nutrient Service Providers will be required to undergo an audit every 12 months using the Year 1 Certification audit date as the effective date and submit their annual program registration fee in order to maintain status in the program.

4R Nutrient Certified Logo Use: All 4R Certification logos used in presentations, in print or electronically need to meet the guidelines as listed on the www.nutrientstewardship.com website.

4R Certification Suspension: The certification of a Nutrient Service Provider may be suspended in certain cases, for reasons such as failing to undergo the annual audit, failing to submit annual program registration fee, non-compliance with the 4R Standard without sufficient corrective action process, and voluntary cancellation.

Indiana 4R Adaptive Management Policy

Introduction to land grant recommendations and option of adaptive management

The 4R Nutrient Stewardship Certification program is built around a framework of science - based nutrient recommendations to achieve cropping system goals, such as increased production, increased farmer profitability, enhanced environmental protection and improved sustainability. A base set of recommendations that consider crop yield response are provided by land grant universities. Adaptive management is recognized by the 4R Certification Program as an option available to Nutrient Service Providers (NSPs) that have found that land grant recommendation restrict crop yield due to regional soil or management system factors. NSPs should document this through data collection and analysis within their organization.

The Land Grant University recommendations provide a guideline for nutrient use to address yield and nutrient loss potential limiting conditions for a majority of soils and management systems. These recommendations look to identify nutrient levels that support attainment of 95% of maximum yield or better on a consistent basis.

It is recognized that no database is large enough to support all possible soils or production situations occurring in all locations within a region or state. Adaptive management is provided as an option for NSPs to provide localized recommendations where locally generated data identifies situations where land grant recommendations limit yield. Adaptive management is provided as a tool for the NSP to adjust rates to address documented production concerns in their market area.

Rates that are less than the Land Grant University recommendations are not considered problematic from an environmental standpoint by the certification program but should be supported by yield data that the customer can evaluate. Thus, these applications are not considered a concern in the audit.

Rates that exceed the Land Grant University recommendations must follow language according to Standard Requirement no. A1.1 and A2.1. Thus, recommendations that exceed Land Grant University rates must have a supporting data set that shows yield and water quality impacts. The type of supporting data sets for each are described below.

Data expectations for adaptive management

NSPs using adaptive management justification need to provide a summary of how their recommendations improve yield and does not impact water quality. All data provided is confidential and will not be shared beyond use of the Nutrient Stewardship Council Certification Body to assure that a scientifically defensible data set for the recommendations is available and has been reviewed through the audit and certification process.

A data set that documents “reasonable expectation of improved yield” results from the adaptive management recommendation when compared to the Land Grant University recommendation (control treatment) should be provided as a basis to substantiate the recommendation.

Examples of such data sets are:

1. Literature review that supports the increased nutrient application; or
2. Self - designed projects to quantify water results at the edge of field and or in-field. The control comparison will be the land grant university recommendation compared to the adaptive management practice; or
3. Consultation with a water quality expert willing to provide the documentation. Purdue University Agricultural Extension, Soil & Water Conservation Districts, local colleges or Land Grant institutions can assist.

Adaptive Management Data Summary Example Template

The form below is provided as a summary outline of the type of data that should be included for consideration. Other forms of documentation that addresses the questions below can be substituted by NSP to document.

1. Describe how the fertility data was collected. Examples include:
 - i. Time period of data collection
 - ii. Number of replications used per site
 - iii. Number of sites
 - iv. Treatments
 - v. Any other information on data collected that will help in understanding outcomes.
 - vi. Soil type or management where the adaptive management practices are used.
2. Please provide a written description how your recommendations are supported by response to yield (or yield response curve) for the recommendations.
3. How did you evaluate potential water quality impacts of the recommendation and what did you find?

Example 1. Replicated On-Farm Trials

On - Farm Trials Nitrogen N recommendations in Corn Treatments:

1. Purdue University Rates based on MRTN approach for corn production (control)
2. Adaptive Management rate from NSP (treatment)

Experimental Design: Randomized complete block with minimum of three replications. Plot width will depend on cooperators' equipment; planting, and harvesting. Plot size should match at least 2x width of the combine header to maximize harvest efficiency. Combines should be calibrated in season where yield monitor data will be used for crop yield. Harvest passes from the center of plots will be extracted for treatment comparisons. GIS software can be used to tease out additional comparisons by soil type where soil types run perpendicular to treatments. Consideration to tile needs to be given and run opposite to the treatments.

Sample Plot Layout: [add diagram]

Data Collection:

- Soil samples for a standard soil test should be collected with timing determined by when future comparison samples are taken so same time of year sampling is used in all soil testing for each strip.
- Pre-sidedress soil nitrate samples
- Plant tissue samples (optional).
- Grain yield at harvest.
- Corn stalk nitrate samples
- Follow up soil samples based on treatment. If two crop rotation used in plot after second crop. Otherwise after first crop.

Example 2. Monitoring Soil Test and Crop Yield

Evaluating Nitrogen N recommendations in Corn (Single Period)

Experimental Design: Site specific yields (yield monitoring data), fertilizer applications (as-applied) and soil test are collected (GPS coordinates). Data collected by soil type, by yield management zone or other standardized production unit is suggested. The beginning and ending soil test, summation of fertilizer nutrients added and nutrients removed are used to monitor soil test change for comparison against land grant calculation and recommendation expectation of building, maintaining or drawing down soil test.

4R References

4R Program Documents

Certification Program References

4R IN Nutrient Stewardship Certification Manual

Auditor Manual for 4R IN Nutrient Stewardship Certification

Primary External References

[Indiana Natural Resource Conservation Service 590 Standard;](#)

[Purdue University Nitrogen Management Guidelines for Corn in Indiana;](#)

[Tri-State Fertilizer Recommendation Guide;](#)

[Corn Nitrogen Rate Calculator;](#)

[Indiana Department of Environmental Management Confined Feeding Program;](#)

[Office of Indiana State Chemist Fertilizer Laws and Regulations](#)

International Plant Nutrition Institute (IPNI). *4R Plant Nutrition: A Manual for Improving the Management of Plant Nutrition*. North American Version. Norcross, GA, 2012.

International Plant Nutrition Institute (IPNI). *4R NY Nutrient Stewardship Portal*. <http://www.ipni.net/4R> Accessed February 2013.

National Oceanic and Atmospheric Administration (NOAA). *National Weather Service*. <http://www.weather.gov/>. Accessed April 2013. ***

Natural Resources Conservation Service (NRCS). *Conservation Practice Standard - Nutrient Management (Ac.) Code 590*. <https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards> Accessed April 2018.

Natural Resources Conservation Service (NRCS). *Field Office Technical Guide Locator* <https://www.nrcs.usda.gov/resources/guides-and-instructions/field-office-technical-guides>

The Fertilizer Institute (TFI). *Nutrient Stewardship | The Right Time for Nutrient Stewardship Is Right Now*. <http://www.nutrientstewardship.com> Accessed February 2013.

CONTACT/QUESTIONS

Questions about the 4R Nutrient Stewardship Certification Program or this document should be directed to the 4R Program Administrator:

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