

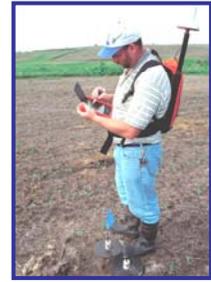


United States Department of Agriculture
 Natural Resources Conservation Service
 200 North High Street, Room 522
 Columbus Ohio 43215

Prepared By:

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In Consultation with NRCS
 Conservation Partners



Ohio Water Quality and Energy Reduction System Nutrient Management (590)

Payment Caps:

Management Level I	Maximum over Life of Contract: \$ 19,200.00
Management Level II	Maximum over Life of Contract: \$ 79,200.00
Management Level III	Maximum over Life of Contract: \$ 90,700.00

Practices that work together to reduce energy consumption, maintain water quality, improve soil quality and provide fertility for crop production are to be planned and contracted together as listed below. The *Water Quality and Energy Reduction System, Nutrient Management (590)* payment is NOT to be used in combination with any other *Air or Water Quality and Energy Reduction System*, nor is it to be used in combination with any other federal program such as CSP or CRP on the same land. If manure is going to be applied to the contracted acres use the *Water Quality and Energy Reduction System, Waste Utilization (633)* management payment rather than this system.

This system assumes adequate drainage. Practices may not be feasible without adequate subsurface drainage. If soils are not adequately drained, a systematic tile system should be considered prior to contracting this Conservation Management System.

Base Level Activities:

To qualify for any of these payments, the participant must be applying the following base level activities:

- 1) Must have current soil tests (no older than 5 yrs) representing all contracted acres.
- 2) Must have all gully erosion controlled.
- 3) All tile breaks will be repaired within a year of the contract being signed.

Payment Considerations:

(See the “Definitions and Payment Considerations” section for more specific payment considerations.)

- 1) All supporting practices must be fully adopted prior to issuing the 590 Nutrient Management payment.
- 2) Fertilizer application records must be presented to the District Conservationist (DC) for review.
- 3) Soil test records must be presented to the DC for review.
- 4) If one of the *Residue and Tillage Management - Controlled Traffic* options is selected, a geo-referenced traffic map will be submitted to the DC for review prior to this payment being issued.
- 5) For *Nutrient Management Level II and III*, a copy of the VRT nutrient management plan developed by a Certified Crop Advisor (CCA), or a Certified Professional Agronomist (CPA), including yield maps, grid or zone maps along with geo-referenced biennial soil reports will be submitted to the DC prior to issuing the 590 Nutrient Management payment.
- 6) The participant must sign the self certification form verifying that supporting practices have been adopted and that the OH 590 Nutrient Management practice standard and the Tri-State Fertility Guide were followed on all contracted acres.

Water Quality and Energy Reduction System, Nutrient Management Level I

Base Level Activities:

To qualify for this system payment, the participant must be applying the following base level activities:

- 1) Must have current soil tests (no older than 5 yrs) representing all contracted acres.
- 2) Must have all gully erosion controlled.
- 3) All tile breaks will be repaired within a year of the contract being signed.

In addition to the Base Level Activities described above the following supporting practices must be applied:

Practice payments can be contracted only if the participant has not previously adopted the practice.

See [Definitions and Payment Considerations](#) on pages 5-8 of this document for more detailed descriptions of practices.

Practice Code	Supporting Practice Name	Payment Unit	Payment Type	Rate	Payment Cap
328	Conservation Crop Rotation	AC	PR	\$7.00	\$1400.00
	<ul style="list-style-type: none"> • No back to back low residue crops without a cover crop (Wheat with stubble removed (<8 inches) constitutes a low residue crop) 				
329 / 346	Residue and Tillage Management, NoTill, Ridge	AC	PR	\$15.00	\$3000.00
	<ul style="list-style-type: none"> • Utilizes a non-inversion tillage practice such as NoTill, StripTill, Direct Seed, or RidgeTill (Residue and Tillage Management Practice 329 or 346) every year of the contract 				
590	Nutrient Management System, Level I	AC	PR	\$10.00	\$2000.00
	<p style="color: red;">This payment cannot be issued until all other supporting practices have been implemented. This is because this practice should account for the supporting practices of the conservation system.</p> <ul style="list-style-type: none"> • Must meet Base Level Activities above • The OH 590 Nutrient Management practice standard must be followed • Continue to soil test through the life of the contract (1 composite sample per 25 ac. every 3 yrs.) • Fertilizer is applied not exceeding Tri-State Fertility Guide (Ext. Bulletin E-2567) recommendations • NO fertilizer will be applied on frozen or snow covered ground • Maintains accurate fertilizer application records per field 				

Water Quality and Energy Reduction System, Nutrient Management Level II

Base Level Activities:

To qualify for this system payment, the participant must be applying the following base level activities:

- 1) Must have current soil tests (no older than 5 yrs) representing all contracted acres.
- 2) Must have all gully erosion controlled.
- 3) All tile breaks will be repaired within a year of the contract being signed.

In addition to the Base Level Activities described above the following supporting practices must be applied:

Practice payments can be contracted only if the participant has not previously adopted the practice.

See [Definitions and Payment Considerations](#) on pages 5-8 of this document for more detailed descriptions of practices.

Practice Code	Supporting Practice Name	Payment Unit	Payment Type	Rate	Payment Cap
328	Conservation Crop Rotation	AC	PR	\$7.00	\$1400.00
	<ul style="list-style-type: none"> • No back to back low residue crops without a cover crop (Wheat with stubble removed (<8 inches) constitutes a low residue crop) 				
329 / 346	Option 1: Residue and Tillage Management	AC	PR	\$15.00	\$3000.00
OR	<ul style="list-style-type: none"> • Utilizes a non-inversion tillage practice such as NoTill, StripTill, Direct Seed, or RidgeTill (Residue and Tillage Management Practice 329 or 346) every year of the contract 				
329 / 346	Option 2: Residue and Tillage Management with Controlled Traffic Level I	AC	PR	\$40.00	\$8000.00
OR	<ul style="list-style-type: none"> • Utilizes a non-inversion tillage practice such as NoTill, StripTill, Direct Seed, or RidgeTill (Residue and Tillage Management Practice 329 or 346) every year of the contract • Utilizes RTK automatic steering technology for high load field traffic <p style="color: red;">*With the exception of the small grain head (wheat and soybean) of the combine.</p>				
329 / 346	Option 3: Residue and Tillage Management with Controlled Traffic Level II	AC	PR	\$50.00	\$10000.00
	<ul style="list-style-type: none"> • Utilizes a non-inversion tillage practice such as NoTill, StripTill, Direct Seed, or RidgeTill (Residue and Tillage Management Practice 329 or 346) every year of the contract • Utilizes RTK automatic steering technology for high load field traffic <p style="color: red;">* Includes the small grain head (wheat and soybean) of the combine.</p>				
340	Cover Crops	AC	PR	\$50-*\$70	\$7000.00
	<ul style="list-style-type: none"> • Utilizes Cover Crops (340) on a minimum of 30% of the contracted acres either <ul style="list-style-type: none"> ○ on yearly basis ○ or over the life of the contract <p>Payment is based on acres of cover crops planted.</p> <p style="color: red;">*NOTE: The \$70 per acre is only for cover crops established in corn (for grain) or soybeans prior to October 1 using aerial seeding or other method specifically designed to seed in a standing crop. Otherwise use \$50 per acre.</p>				
386 / 390 / 393	Field Border / Riparian Herbaceous Cover / Filter Strip	AC	PR	\$190-\$300	\$6000.00
	<p style="color: red;">See Definitions for details</p> <ul style="list-style-type: none"> • A herbaceous buffer will be established along all waters of the state 				
590	Nutrient Management System, Level II	AC	PR	\$30.00	\$6000.00
	<p style="color: red;">This payment cannot be issued until all other supporting practices have been implemented. This is because this practice should account for the supporting practices of the conservation system.</p> <ul style="list-style-type: none"> • Must meet Base Level Activities above • The OH 590 Nutrient Management practice standard must be followed • Fertilizer is applied not exceeding Tri-State Fertility Guide (Ext. Bulletin E-2567) recommendations • NO fertilizer will be applied on frozen or snow covered ground • Maintains accurate fertilizer application records per field • A geo-referenced Variable Rate Technology grid or zone nutrient management plan will be developed by a CCA, CPA, or TSP reflecting the other practices in the conservation management system above. Requires biennial soil tests. • Biennial geo-referenced soil tests are taken using the VRT nutrient management plan developed above. • Phosphorus fertilizer must be injected or incorporated into the top 3-5 inches of the soil using an AerWay, Phoenix or similar implement that incorporates the fertilizer but does not destroy the soil structure developed by the NoTill cropping system. If the fertilizer is not incorporated, an alternative would be NOT to apply fertilizer during the winter months (December 1st to March 1st). 				

Water Quality and Energy Reduction System, Nutrient Management Level III

Base Level Activities:

To qualify for this system payment, the participant must be applying the following base level activities:

- 1) Must have current soil tests (no older than 5 yrs) representing all contracted acres.
- 2) Must have all gully erosion controlled.
- 3) All tile breaks will be repaired within a year of the contract being signed.

In addition to the Base Level Activities described above the following supporting practices must be applied:

Practice payments can be contracted only if the participant has not previously adopted the practice.

See Definitions and Payment Considerations on pages 5-8 of this document for more detailed descriptions of practices.

Practice Code	Supporting Practice Name	Payment Unit	Payment Type	Rate	Payment Cap
328	Conservation Crop Rotation	AC	PR	\$7.00	\$1400.00
	<ul style="list-style-type: none"> • No back to back low residue crops without a cover crop (Wheat with stubble removed (<8 inches) constitutes a low residue crop) 				
329 / 346	Option 1: Residue and Tillage Management	AC	PR	\$15.00	\$3000.00
OR	<ul style="list-style-type: none"> • Utilizes a non-inversion tillage practice such as NoTill, StripTill, Direct Seed, or RidgeTill (Residue and Tillage Management Practice 329 or 346) every year of the contract 				
329 / 346	Option 2: Residue and Tillage Management with Controlled Traffic Level I	AC	PR	\$40.00	\$8000.00
OR	<ul style="list-style-type: none"> • Utilizes a non-inversion tillage practice such as NoTill, StripTill, Direct Seed, or RidgeTill (Residue and Tillage Management Practice 329 or 346) every year of the contract • Utilizes RTK automatic steering technology for high load field traffic <p style="color: red;">*With the exception of the small grain head (wheat and soybean) of the combine.</p>				
329 / 346	Option 3: Residue and Tillage Management with Controlled Traffic Level II	AC	PR	\$50.00	\$10000.00
	<ul style="list-style-type: none"> • Utilizes a non-inversion tillage practice such as NoTill, StripTill, Direct Seed, or RidgeTill (Residue and Tillage Management Practice 329 or 346) every year of the contract • Utilizes RTK automatic steering technology for high load field traffic <p style="color: red;">* Includes the small grain head (wheat and soybean) of the combine.</p>				
340	Cover Crops	AC	PR	\$50-*\$70	\$7000.00
	<ul style="list-style-type: none"> • Utilizes Cover Crops (340) on a minimum of 50% of the contracted acres either <ul style="list-style-type: none"> ○ on yearly basis ○ or over the life of the contract <p>Payment is based on acres of cover crops planted.</p> <p style="color: red;">*NOTE: The \$70 per acre is only for cover crops established in corn (for grain) or soybeans prior to October 1 using aerial seeding or other method specifically designed to seed in a standing crop. Otherwise use \$50 per acre.</p>				
386 / 390 / 393	Field Border / Riparian Herbaceous Cover / Filter Strip	AC	PR	\$190-\$300	\$6000.00
	See Definitions for details				
	<ul style="list-style-type: none"> • A herbaceous buffer will be established along all waters of the state 				
587	Structure for Water Control (if needed)	NUM	PR	\$792-\$1556	\$5000.00
	<ul style="list-style-type: none"> • Required if technically feasible on all tile outlets • Constructed Wetland standard (656) can be used as an alternative to (587) 				
554	Drainage Water Management (Required if 587 is installed)	NUM	PR	\$100	\$500.00
	<ul style="list-style-type: none"> • Follow the OH 554 Drainage Water Management practice standard 				
590	Nutrient Management System, Level III	AC	PR	\$40.00	\$8000.00
	<p style="color: red; text-align: center;">This payment cannot be issued until all other supporting practices have been implemented. This is because this practice should account for the supporting practices of the conservation system.</p> <ul style="list-style-type: none"> • The OH 590 Nutrient Management practice standard must be followed • Fertilizer is applied not exceeding Tri-State Fertility Guide (Ext. Bulletin E-2567) recommendations • NO fertilizer will be applied on frozen or snow covered ground • Maintains accurate fertilizer application records per field • A geo-referenced Variable Rate Technology grid or zone nutrient management plan will be developed by a CCA, CPA, or TSP reflecting the other practices in the conservation management system above. Requires biennial soil tests. • Biennial geo-referenced soil tests are taken and lime and fertilizer are applied according to the VRT nutrient management plan developed above. • Phosphorus fertilizer must be injected or incorporated into the top 3-5 inches of the soil using an AerWay, Phoenix, or similar implement that incorporates the fertilizer but does not destroy the soil structure developed by the NoTill cropping system. If the fertilizer is not incorporated, an alternative would be NOT to apply fertilizer during the winter months (December 1st to March 1st). 				

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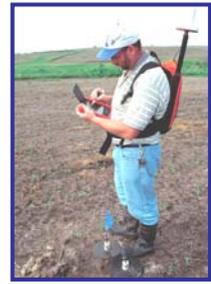


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Ohio Water Quality and Energy Reduction System Nutrient Management (590) Definitions and Payment Considerations

328 - Conservation Crop Rotation

Definition: Growing crops in a recurring sequence on the same field.

In order to receive a payment for this supporting practice, there needs to be a significant change from the rotation the producer is currently using. Examples of change would be 1) Changing from a corn-soybean rotation to a corn-soybean-wheat rotation 2) Substituting high residue crops for low residue crops 3) Utilizing cover crops after low residue crops such as soybeans. As a management practice in EQIP, payment can be made for up to 3 years if needed to adopt the practice. The producer will self certify the fields and crops used each year of the contract. This is subject to spot checks.

329 / 346 - Residue and Tillage Management, NoTill, StripTill, RidgeTill

Definition: Managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting soil-disturbing activities to only those necessary to place nutrients, condition residue and plant crops.

The producer has options under this practice. The producer can utilize NoTill, StripTill, or RidgeTill as a stand alone practice, or can combine it with controlled traffic. If one of the controlled traffic options is chosen, a geo-referenced map of each field must be developed showing the traffic pattern for all high load traffic. RTK / GPS auto steer technology must be utilized throughout the life of the contract. RTK systems only will be considered. The producer must submit a copy of the bills to the DC showing purchase or rental of RTK equipment.

In order to receive a payment for this supporting practice, there needs to be a significant change from the type of tillage the producer is currently using. Examples would be 1) converting from a chisel / disk system to NoTill or 2) converting from rotational NoTill to continuous NoTill. To qualify for payment under this practice, the tillage system must be NoTill, StripTill, or RidgeTill every year for the life of the contract. As a management practice in EQIP, payment can be made for up to 3 years if needed to adopt the practice. The producer will self certify that NoTill, StripTill, or RidgeTill was used each year of the contract. This is subject to spot checks.

For the purposes of this Water Quality and Energy Reduction System: Surface tillage using an AerWay, Phoenix, or similar implement, set at a shallow depth (3-5 inches), and at a low angle of attack (5 degrees or less), can be used to incorporate fertilizer. Soil structure below 3-5 inches should be left undisturbed. Full width tillage is not authorized for anything but nutrient incorporation. If surface tillage is used, the STIR value must be kept below 20.

Definitions and Payment Considerations (Continued)

340 - Cover Crops

Definition: Crops including grasses and legumes for seasonal cover and other conservation purposes.

In order to receive a payment for this supporting practice, there needs to be a significant change from system the producer is currently using. If the producer has a history of utilizing cover crops successfully in a conservation system, then payment cannot be authorized. As a management practice in EQIP, payment can be made for up to 3 years if needed to adopt the practice. Cover Crops must be utilized on 30%-50% of the contracted acres either on yearly basis or over the life of the contract.

NOTE: The higher payment per acre is only for cover crops established in corn (for grain) or soybeans prior to October 1 using aerial seeding or other method specifically designed to seed in a standing crop. Otherwise use the lower rate per acre. Payment is based on acres of cover crops planted. The producer is responsible for making sure the cover crop is successfully established. The producer will self certify each year the location, acres and type of cover crops established. This is subject to spot checks.

386 / 390 / 393 - Field Border / Riparian Herbaceous Cover / Filter Strip

Definition:

In order to receive payment for this supporting practice, an herbaceous buffer must be newly established as per the OH 386 - 390 or 393 practice standards along all waters of the state. See standards for width requirements. Payments cannot be made for existing buffers. This is a one time payment to establish the practice. As an alternative, these buffers can be enrolled in CRP; however the producer cannot receive payment under both CRP and EQIP for the same practice on the same land. Existing buffers are credited but cannot receive a payment for establishment.

587 - Structure for Water Control

Definition: A structure at the end of a tile or subsurface drain. It is utilized to control the water elevation or temporarily block water flow. It must have an inspection port for monitoring and pumping water if needed to maintain water quality.

These are installed if feasible as determined by an NRCS engineer. This *Water Quality and Energy Reduction System* was developed for up to five structures. Payment will vary depending on the size of the structure needed. This is a one time payment for installing the structure.

554 - Drainage Water Management

Definition: The process of managing water discharges from 587 Structures for Water Control subsurface agricultural drainage systems.

In order to receive a payment for this supporting practice, a 587 Structure for Water Control must have been newly installed as part of this same contract. If no structure was installed then payment is not authorized. Payment can be made for up to five structures. As a management practice in EQIP, payment can be made for up to 3 years if needed to adopt the practice. The producer will self certify that the structure was managed as designated. This is subject to spot checks.

Definitions and Payment Considerations (Continued)

590 - Nutrient Management

Definition: Managing the amount, source, placement, form and timing of the application of plant nutrients and soil amendments. **This payment cannot be issued until all other supporting practices have been implemented. This is because this practice should account for the supporting practices of the conservation system.** In order to receive a payment for this practice, the OH 590 Nutrient Management practice standard must be followed. In addition, there are other requirements under each level of nutrient management that must be followed as listed:

Management Level I	Management Level II	Management Level III
<ul style="list-style-type: none"> Continue to soil test through the life of the contract (one sample per 25 acres every 3 yrs.) Fertilizer is applied not exceeding Tri-State Fertility Guide (Ext. Bulletin E-2567) recommendations NO fertilizer will be applied on frozen or snow covered ground Maintains accurate fertilizer application records per field 	<ul style="list-style-type: none"> Fertilizer is applied not exceeding Tri-State Fertility Guide (Ext. Bulletin E-2567) recommendations NO fertilizer will be applied on frozen or snow covered ground Maintains accurate fertilizer application records per field A geo-reference grid or zone nutrient management plan will be developed by a CCA or CPA, incorporating the other practices in this conservation management system. Geo-referenced biennial soil tests are taken using the Variable Rate Technology (VRT) nutrient management plan developed above. Phosphorus fertilizer must be injected or incorporated into the top 3-5 inches of the soil using an AerWay, Phoenix, or similar implement that incorporates the fertilizer but does not destroy the soil structure developed by the NoTill cropping system. If the fertilizer is not incorporated, an alternative would be NOT to apply fertilizer during the winter months (December 1st to March 1st). 	<ul style="list-style-type: none"> Fertilizer is applied not exceeding Tri-State Fertility Guide (Ext. Bulletin E-2567) recommendations NO fertilizer will be applied on frozen or snow covered ground Maintains accurate fertilizer application records per field A geo-referenced grid or zone nutrient management plan will be developed by a CCA or CPA, incorporating the other practices in this conservation management system. Geo-referenced biennial soil tests are taken and lime and fertilizer are applied using Variable Rate Technology (VRT) according to the nutrient management plan above. Phosphorus fertilizer must be injected or incorporated into the top 3-5 inches of the soil using an AerWay, Phoenix, or similar implement that incorporates the fertilizer but does not destroy the soil structure developed by the NoTill cropping system. If the fertilizer is not incorporated, an alternative would be NOT to apply fertilizer during the winter months (December 1st to March 1st).

Nutrient Management Plan

Definition: A plan that documents the amount, source, placement, form and timing of the application of nutrients and soil amendments. The Ohio 590 Nutrient Management practice standard is the guidance to be used in developing the plan. The purposes of a nutrient management plan are: 1) To adequately supply nutrients for plant production. 2) To properly utilize manure or organic by-products as a plant nutrient source. 3) To minimize agricultural nonpoint source pollution of surface and ground water resources. 4) To maintain or improve the physical, chemical and biological condition of soil.

NOTE: The nutrient management plan should incorporate the supporting practices of this conservation system. Under Levels II and III of this *Water Quality and Energy Reduction System*, a Variable Rate Technology (VRT) Grid or Zone nutrient management plan must be developed by a CCA, CPA or TSP. The Nutrient Management Plan, as well as GIS maps with geo-referenced biennial soil test reports must be submitted to the DC prior to the 590 Nutrient Management payment being issued. As a management practice in EQIP, payment can be made for up to 3 years if needed to adopt the practice. The producer will self certify that the nutrient management plan was followed. This is subject to spot checks.

Tri-State Fertility Guide:

Definition: The Tri-State Fertility Guide (Extension Bulletin E-2567), is a publication developed by Ohio, Indiana, and Michigan. Among other things, it provides lime and fertilizer recommendations for corn, soybean, small grain, and meadow crops. The Tri-State Fertility Guide should be used to set the **maximum** rate of fertilizer to be used based on soil test values and crop removal rates.

Definitions and Payment Considerations (Continued)

Soil Testing

Definition: A soil test is the analysis of a soil sample to determine nutrient content, composition and other characteristics. Tests are usually performed to measure pH, fertility and indicate deficiencies that need to be remedied.

A **regular soil test** is a composite of 15-20 soil samples that are combined and mixed thoroughly. A sample is then sent for analysis. The report from the analysis is used to determine the rate of lime and nutrients based on the soil test values and the crop to be grown. The composite sample must represent 25 acres or less.

VRT – or Variable Rate Technology

A **Grid Sampling** divides the field into square grids representing 2 - 6 acres. Several soil samples are pulled from each square in the grid and combined to form a composite sample representing that square. Fertilizer can then be varied across the grid applying just the nutrients needed in each square. The grids cannot represent more than 6 acres. **If a grid sampling method is utilized, the Nutrient Management Plan, as well as GIS maps with geo-referenced biennial soil test reports must be submitted to the DC prior to the 590 Nutrient Management payment being issued.**

Management Zones is a system of dividing up the field to try and group similar soil characteristics as well as other factors of interest. For example, a common system of management zones overlays soils maps with crop yield maps. Polygons are then drawn around areas of the field that have similar soils and crop yield characteristics. Several soil samples are pulled from each zone and combined to form a composite sample representing that zone. Each zone must represent 12 acres or less. These zones are located using GPS technology. Fertilizer can then be varied across the zones applying just the nutrients needed in each zone. **If a management zone sampling is utilized, the Nutrient Management Plan, as well as GIS maps with geo-referenced biennial soil test reports must be submitted to the DC prior to the 590 Nutrient Management payment being issued.**

Controlled Traffic Farming (CTF):

Definition: Controlled traffic farming is confining all equipment in the farming system to a set of wheel tracks that are used year after year. The result limits compaction to the wheel tracks and reduces soil compaction outside of the tracks for crop growth. Studies have shown that in conventional farming, up to 85% of the field becomes compacted from heavy machinery. Compaction causes a decreased soil infiltration, a decrease air and water holding capacity in the soil, higher water runoff and soil erosion, and decreased yields.

Controlled Traffic Farming requires modifying equipment so that wheel widths match, allowing tires to run on the same permanent wheel tracks. Operators must commit to driving down the same tramlines for each field operation. The most effective way is to use a RTK satellite guided, or autosteer system that ensures accuracy.

NOTE: If a controlled traffic option is chosen as part of this Water Quality and Energy Reduction System, a GIS map showing the traffic pattern, as well as bills showing the rental or purchase of RTK autosteer equipment must be presented to the DC before payment will be issued. RTK / GPS auto steer technology must be utilized throughout the life of the contract. RTK systems only will be considered. The producer must submit a copy of the bills to the DC showing purchase or rental of RTK equipment. The producer will self certify that the controlled traffic plan was followed. This is subject to spot checks.