PUBLIC COMMENTS SUBMITTED AT HIGHLANDS
COUNCIL MEETING ON APRIL 21, 2016

David Shope
PO Box 651
Long Valley, NJ 07853

February 16, 2016

Judge Michael Dressler
Bergen County Justice Center
Surrogate Court – Room 211
Hackensack, NJ 07601-7000

Freeholder Robert Walton
20 Wells Avenue
Hampton, NJ 08827

RE: Highlands Land Use & AG Viability

Gentlemen:

Enclosed please find the following:

1. Holzhauer & Holenstein report on the impact of the Highlands Act on property values. This report was commissioned by the Warren County Freeholders.
2. 2012 USDA AG Census Data with my calculations, drawn from USDA data, on the earnings per acre based on NET cash earned.
3. 2012 USDA Data showing average N.J. cropland rented for $68/acre. This $68 is gross to the landowners, from which he must subtract his expenses.
4. 2007 USDA AG Census data with my calculations, drawn from USDA data, on the earnings per acre on NET cashed earned.
5. Excerpts from the USDA's 2012 AG Census package showing that there is no place to value the labor of anyone unless they are paid for it. However, question 2, section 23 acknowledges the fact that farms also use unpaid labor.

My own conversations with many small and medium sized farm operators indicates the vast majority Do Not pay their friends, family members or themselves for their labor contribution. This fact further skews farm earnings to the bright side, as there is no way to debit what would be a legitimate expense in any other business.

6. A fax dated May 2, 2003 from First Pioneer Farm Credit to Robert Tucker. Bob Tucker asked for this opinion when Lebanon Twp. was in the process of down zoning. Eileen Swan was Mayor at this time.

I borrowed from them twice, each time they wanted to know local zoning, State regulations, etc. to determine potential building lot yields, etc. so they could value underdeveloped land. I think the letter speaks for itself.

An analysis of the USDA Data (#2, 3, 4, &5) can easily show the value of farmland just as farmland, with its potential development value stripped from it. I assume a 5% return on investment factor, historically, a reasonable assumption.

All & all, this paints a bleak picture for agriculture as a viable land use for the highlands farmer/landowner when the Highlands Act has made it, essentially, the only choice for most.

It is doomed to fail. It will take some time as the current landowner; who are I their 60's & 70's, die off and younger people do no pick up this avocation. They will leave behind essentially worthless asset to the vultures.

Yours Truly,

Dave Shope

HOLZHAUER & HOLENSTEIN, LLC

REAL ESTATE ADVISORY SERVICES

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CONSULTING REPORT
LIMITED-RESTRICTED FORMAT

IMPACT OF
HIGHLANDS WATER PROTECTION AND PLANNING ACT
AND ACT RULES
ON PROPERTY VALUE WITHIN THE
PRESERVATION DISTRICT

PROJECT REFERENCE

HIGHLANDS REGION

NJ HIGHLANDS PRESERVATION AREA

PREPARED BY

MICHAEL E. HOLENSTEIN, MAI, CTA
SCGREA; NY, NJ-RG01234, PA-GA1733-R

REPORT DATE

SEPTEMBER 1, 2007

FOR

BOARD OF CHOSEN FREEHOLDERS
WARREN COUNTY
%
HUESTON McNULTY, PC
ATTORNEYS AT LAW
256 COLUMBIA TURNPIKE
FLORHAM PARK, NJ 07932

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HOLZHAUER & HOLENSTEIN, LLC

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September 1, 2007

Hueston McNulty, PC
Attorneys at Law
256 Columbia Turnpike, Suite 207
Florham Park, NJ 07932

Attn: Stephen H. Shaw, Esq., as Warren County Special Counsel, Highlands Litigation
Re: Appraisal & Consulting Services, Impact of the Highlands Act & Act Rules, Warren Co, NJ

Dear Mr. Shaw:

I understand that your Firm is Special Counsel to Warren County (the "Client") in prospective litigation related to passage of the Highlands Act Legislation (the "Act") and associated Rules (the "Act Rules").

In accordance with your request, I have prepared this consulting report for use by the Client, its Subsidiaries, and Assigns as an outline of expert testimony to be conducted by Michael E. Holenstein, MAI in connection with this work.

The "purpose" of the work is to demonstrate the impact that the Act and Act Rules have had on the value of property located within the Preservation District. The function ("use") of the work is to provide the Client with litigation support services.

Thank you for this opportunity to have continued our service to the Warren County Board of Chosen Freeholders.

Respectfully submitted,
HOLZHAUER & HOLENSTEIN, LLC
By:

MEH via Electronic 10/10/07
MICHAEL E. HOLENSTEIN, MAI, CTA
SCGREA: NY, NJ-RG01234, PA-GA1733R

MEH/lps
Enclosures
File #1073-10-07 Summary

INTRODUCTION

The Highlands Act

The Highlands Act established two distinct areas of influence identified as the Preservation District and the Planning District. This report addresses the impact that the Act and ensuing Act Rules manifest on property values within the Preservation District.

The Act Rules

It is assumed that the reader has access to a copy of the "complete" Highlands Water Protection and Planning Act Rules, circa November 2006,

(www.nj.gov/dep/rules/rules/njac7_38_2006_1204complete.pdf)

and the "Readopted Rule"

(www.nj.gov/dep/rules/adoptions/njac7_38_20061204.pdf)

and is otherwise generally familiar with the Highlands Act and the body of land within NJ encompassed by the Highlands.

Act-Rules & Impacts

Discussion of the Act and Act Rules requires some convention to avoid confusion and excessive rhetoric.

Basis understandings relied upon within this document include:

1. That when presenting or discussing issues (pro or con) regarding the Act and Act Rules, the presenter must define the scope of influence under which their comments are being made. Specifically, comments must be discussed in the "macro" sense (Statewide NJ) or the "micro" sense (political and neighborhood subdivisions within the State, or smaller). Generally speaking, the Act and Act Rules are directed to a scope of influence intended to be "macro" in the sense of characterizing impacts and benefits to the State of NJ as a whole.

2. Because the market for real estate is dynamic, findings and conclusions must either be expressed as of a date certain (e.g. a "value opinion") or as a general affect that is likely to fluctuate over time (e.g. a "trend opinion"). Opinion regarding "impacts" might reasonably stated as point specific or as a general trend or as a wasting "stigma".

3. That the Highlands Act does not restrict development in a macro sense. In other words, while development may be restricted within the Preservation District (a more "micro" effect), the Act and Act Rules do not specifically prevent development outside the Preservation District.

4. The Act and Act Rules are apparently intended to re-direct development from the Highlands Preservation area to "appropriate" areas of the State. Reliance is placed on regional planning and transfer of development rights ("TDR's") to facilitate re-direction of growth.

5. That the Act and Act Rules do not facilitate or insure that any area outside the Highlands will accept any, if not all, the redirected growth.

6. The impact that the Act and Act Rules have on property use, utility, function, and hence value, has dramatically different impact and ramification when viewed in a macro and micro sense.

7. The impact that the Act and Act Rules have on NJ economics is dramatically different when viewed in a macro and micro sense.

Scope of Work

Holzhauer & Holenstein, LLC ("H&H") is retained by Hueston McNulty, PC on behalf of the County of Warren to assist with:

1. Critical review of the proposed Highlands Water Protection and Planning Act Rules (December 19, 2005) as readopted, and

2. Assessing the impact that the Highlands Act Legislation has on property value within the constituent communities located within the Highlands Preservation District.

Warren County is identified as the "Client" and "Intended User" of these appraisal services. This document is identified as a Consulting Report. Reliance on the report is restricted to the Client, its Affiliates, and Assigns. The appraisal services rendered by H&H are intended to form the basis for expert testimony before judicial and quasi-judicial bodies within the State of New Jersey.

The purpose of this consulting report is stated under #'s 1&2 above. The function ("use") of the consulting report is to provide the Client with litigation support services and to provide the Intended Users with professional interpretation and opinion regarding the Act and Act Rules.

This document is characterized under USPAP as a "Consulting Service/Report". To the extent that the report requires appraisal opinion and/or conclusions, it is identified as a Limited Appraisal in Restricted Report format (USPAP 2-2c). No specific departures from USPAP are invoked. Case study material and evaluations are generally complete appraisals specific to the identified subject properties.

Special Assumptions & Limiting Conditions

1. It is assumed that the Act Rules accurately constitute the representations, findings, and conclusions of the NJ Department of Environmental Protection (the "Department") as preparer and the Act Rules are consistently prepared, or are intended to be consistently prepared, in accordance with the statutory requirements for a State rule.

2. That the Department has conducted appropriate due diligence when relying upon the studies and findings reported by others.

3. That the Department's responses to public comment (regarding the draft rules) are intended to reiterate, clarify, and ratify the firmly founded and correct findings, conclusions, and convictions of the NJDEP that form the substantive basis for the Act Rules.

Inspection, Land & Premises

Michael E. Holenstein, MAI, principal of H&H, LLC, has continually practiced real estate appraisal and consulting services within the NJ Highlands Region for the last 20 years. General familiarity with the region is represented. The cumulative results of approximately 200 independent appraisals are referenced. These properties were individually inspected IAW preparation of those appraisals. Approximately 80 of the appraisals cited were prepared by outside firms reporting to either the State or County Agricultural Development Boards. H&H, LLC is certified to prepare these reports and has prepared approximately 120 of the same within the last 5 years. Familiarity with the property inspection process is represented.

FINDINGS & CONCLUSIONS

Structure of Review

During February 2006, H&H, LLC was retained by this Client to conduct a review of the then proposed Act Rules. Specifically, H&H, LLC was retained to conduct:

1. Critical review of the proposed Highlands Water Protection and Planning Act Rules (December 19, 2005), and

2. Assess the impact that the Highlands Act Legislation has on property value within the constituent communities located within the Highlands Preservation District.

The Act Rules section reviewed by H&H, LLC is found from Page 186 of 372, "Social Impact", through Page 266 of 372, "Agriculture Industry Impact".

The methodology and convention employed to conduct the work was to sequentially address facts, verbiage represented as fact, and findings and conclusions beginning on Page 186 of the proposed Act Rules and ending after Page 372. Periodic direct reference was made to the Act Rules text by citation; independent findings and analysis were inserted where appropriate.

The Holzhauer & Holenstein, LLC report (February 14, 2006) is included herewith by reference.

Act Rules Review

The following paragraphs are excerpts of detailed commentary prepared and submitted by H&H, LLC as subsequently responded to by the Department and recorded within the Act-Rules "re-adoption" text document (www.nj.gov/dep/rules/adoptions/njac7_38_20061204.pdf).

Despite the comments made by H&H and 114 other Commentators, NJDEP has apparently readopted the Act Rules with no substantive changes. Certain of the H&H Comments & Department Responses are listed following. H&H rebuttal comment is included as the same pertains to the Scope of Work associated with this document.

Initially, within the H&H February 14, 2006 report under the heading:

"Social Impact"

H&H Comment: There is no evidence presented (insert: *within the Act Rule Document*) that conclusively demonstrates that the Act Rules provide a macro social impact that is not redundant in the context of prior-existing rules and regulations. Further, the degree to which an impact will be realized is wholly dependant upon presupposed eventualities that have not occurred since adoption of the Act and may, or may not, occur outside the Preservation District. Implementation of TDR's is an excellent example.

NJDEP Response: To Comment # 666 (Page 457) as above:

> *"The Highlands Act consolidates aspects of several existing programs, strengthens their protections, and adds **some** unique protection provisions as well..."*

H&H Rebuttal: Upon review it is evident that the Department does not have a credible response to Comment #666. The assertion that the Act "adds some unique protections provisions" rings hollow. Given the scope and context of the Act and Act Rules together with the resources available to the NJDEP, it is incumbent upon NJDEP to come up with something better than "some unique protection provisions" as support for the Act and Act Rules as not being redundant in the context of the prior existing rules and regulations. As NJDEP has not produced the said examples and proofs it is left to the Reader to garner that the Act and Act Rules are wholly or largely redundant.

Initially, within the H&H February 14, 2006 report under the heading:

"Economic Impact"

H&H Comment:

The net result of transferring development potential and associated economic impact value from the Preservation District to areas outside the core is an effective transfer of property worth from owners within the Preservation District to other private property owners. The order of magnitude for transferred value from one group of private individuals to another is demonstrated by the following model:

The Act Rules cite several different development and buildout scenarios as probable occurrence with the Preservation District. These include (@ Page 217) that the potential dwelling units within the PD (at buildout) total 215,421 units (say 215,000).

H&H independent analysis (attached) supports that the 2006 median home value within the Highlands region is reasonably supported @ $373,000. The impact that the Act-Rules have on property owners within the PD is estimated as follows:

215,000 units @ $373,000/unit = $80,195,000,000.

This calculation demonstrates an $80 Billion loss in ratable base for Highlands PD municipalities.

Further, the above depiction does not account for other forms of development, e.g. commercial and industrial. It also does not make a distinction among dwelling units as may be developed with other than SFR homes.

The "average economic multiplier" for the US is cited within the Act-Rules (@ Page 208) as being Factor = 2X. Therefore, the cost to local economies resulting from the failure to construct and sell 215,000 dwelling units is estimated as follows:

$80.195Billion * Factor (2X) = $160 Billion Dollars

Given the methodology customarily cited within the Act-Rules, the loss in sales and realty transfer tax together with the lost jobs, and jobs spending multipliers results in the conclusion that the Act-Rules will have an astronomical impact on the economy and the ratable bases of the PD communities.

However, this statement is not necessarily true based on the same criticisms of the Act-Rules presentation of cost/benefit analysis. The problem must be evaluated on a micro and macro basis.

Therefore, it may be stated that Statewide, and over a period of time, the loss of ratable base, and the gross affects on the economy are likely to be negligible. The Act and Act-Rules don't prevent development, the same are just redistributed.

The absorption of the theorized dwelling units will be delayed due to the increased regulation and the time necessary to facilitate increased density potentials within "appropriate" areas for development but the gross demand for housing will eventually be met.

What can be stated with certainty is that whatever economic benefit is received by areas outside the Preservation District will come at the expense of the property owners and the local economies within the PD.

NJDEP Response: To Comment # 719 (Page 492) as above:

In the interests of clarity, the H&H Rebuttal comments are inserted in the Response text as **"Blue Bold"**.

"For the reasons set forth at length in the economic impact analysis, the Department believes that the long-term statewide impact of the rules being readopted will be significantly positive rather than negligible or neutral."

When making an argument or asserting a claim, it is inappropriate to assert that the argument or claim is, of itself, sufficiently self evident that it overcomes objection. Comment #719 challenges the Department's claims, assertions, and purported facts. It is therefore "no argument or explanation" to say, *ipse dixit* that the argument or purported facts are either self evident or correct.

"In terms of the asserted short-term redistributive impacts, the Department notes the following:

1. *The commenters assume that the value of $373,000 per home can be extrapolated to new housing. However, as the supply of housing increases, the price of new housing may decline as a result of supply and demand effects and because as new housing is built, the areas in which the construction takes place will, by definition, become more congested and therefore less attractive to subsequent homebuyers."*

There is no question that the unit, $373,000/house, can be relied upon as it is the average of the reported median home prices for all homes sold within the Preservation District communities (50) during the cited time period adjusted for general property appreciation (only) to the date of the report (2006). Does the Department intend by their comment to assert that the unit of $373,000 is too low? The probability is that new housing costs will continue to exceed old housing costs consistent with the movements of the market during the post WWII era.

As for an assertion that the "price of new housing may decline as a result of supply and demand effects", this comment belies the very fundamental of supply and demand. There has not been a single instance of sustained oversupply in the last 60 years. When supply exceeds demand, builders stop building. It is certainly true that there are periodic instances when the market corrects but there is not a single instance of declining values within the Highlands or proximate locations over any 10-year period since the end of WWII. There is also no evidence that the cost of developing homes (bricks & mortar) has declined in support of the Department's illusion that new housing would cost less than existing housing.

As to the issue of congestion affecting desirability, we have only to look at the trends in real estate development within the more suburban counties to the east. There will always be those who want to live in the country but it is the Department's own findings that cite that persons "prefer to live in neighborhoods…." the very like of which would have been built in the Highlands pursuant to Town & Country planning.

2. *"To the extent that development occurs outside the preservation area, the communities in the preservation area will not have to bear the costs of development, for example, the costs of new roads, water and sewer lines, schools, fire and police protection, etc. To the extent that such costs are avoided, communities in the preservation area may experience no net fiscal impact."*

It was my apparent misconception that, under the format used by the Department to present the Act Rules, that a savings of costs equals a benefit. Further, that those costs are appropriately viewed to assess "natural value" as the present value of the cost savings for a period of 25 years discounted @ 5%. Following the Department's logic (when universally applied), the "benefit" to the preservation area property

owners is no les than $1,127 Billion dollars calculated as the present value of $80Billion/year for 25 years @ 5%/annum.

This rebuttal comment is provided to demonstrate the Department's arbitrary application of its supporting logic and to demonstrate the utterly ridiculous use of similar application to assert a "benefit" based on "natural value" as differentiated from the more tangible and generally accepted term "market value".

3. *"Some portion of the new housing would likely be affordable housing, which, would likely have a lower average price than the existing median cited by the commenters".*

Under COAH, it is absolutely likely that some of the new units will be low to moderate. However, it is in the nature of averages to include the highs and lows. The Department's response lacks the illumination associated with an ability to average a series of numbers and is hence not credible.

4. *"Any change in sales tax or realty transfer tax revenues is already reflected in the multiplier, and such changes would not constitute additional benefits or costs to communities in the preservation area."*

So noted.

5. *"The Department's rules contain several exemptions to permit single-family dwellings so the estimated loss of 215,000 units is an obvious overestimate. To date, the Department has confirmed 351 exemptions."*

The Department's inability to be specific about the numbers and types of exemptions as differentiated from stating "some exemptions" highlights the utterly picayune relief that the exemptions offer affected property owners. The 351 confirmed exemptions reflect 0.20% (that's 1/20th of a percent) impact on the cited numbers. The reader is reminded that the number of units cited (@ 215,000) was taken directly from the Act Rules document (@ page 215) and was rounded down from the stated build-out numbers of 215,421 units. The confirmed exemptions (351) fall firmly within the rounding error (421) of the analysis and are therefore inconsequential.

6. *"The Department's regulations may result in some level of reduction in value for landowners in the Highlands but does not deny all use. Consequently, municipalities will not assess these lots as having zero value."*

The Department's acknowledgement that "some level of reduction in value" may be experienced is cavalier at best. The Department is the lead organization in the acquisition of open space and easements within the State of NJ. The Act itself calls for a special evaluation scheme to be implemented to insure that property owners attempting to voluntarily sell their land or easements to the State of NJ are paid "pre-Act" values. These acquisitions demonstrate that the value of development rights

differs widely among impacted properties but that in many cases (as later cited herein) the damage is from 60% to 90% of pre-Act values.

Further, the Department's regulations clearly do not deny all use but the uses allowed may not be economic. This condition may change over time. Pursuant to the definition of an "uneconomic remainder", where a partial taking results in an uneconomic remainder the taking is tantamount to the fee. This condition may eventually result in the Department's Rules affecting a regulatory taking except as may (in the discretion of the issuing agency) be averted by Highlands Preservation Area Approval waiver (NJAC 7:36-6.4).

7. *"A transfer of development program is yet to be developed and its potential positive impacts on property owners cannot be assessed."*

For these reasons, the Department believes that any short-term redistributive impacts are likely to be significantly lower than the commenters project.

The H&H, LLC February 14, 2006 Report was predicated on a general perception that the Act and Act Rules did not limit development *per se* but rather facilitated its transfer to "appropriate" areas within the State.

It has since become clear that, while implementation of TDR's and voluntary cooperation among communities may facilitate the effective transfer of (a portion of) the lost development units, that there is, in all practicality the strong probability that most of the 215,000 "lost" units will never be located within NJ.

Given this probability, the H&H conclusion that,

"…the Act-Rules will have an astronomical impact on the economy and the ratable bases of the PD communities."

is irrefutable. The notion (held by H&H) that the value associated with lost and gained development potentials was being redistributed by the Department is evidently not appropriate. It may therefore be conclusively stated that, to the degree that development potentials are not able to be transferred, the worth of the same will be lost to the State of NJ as differentiated from just lost by the Preservation District Communities.

Regardless of the eventual disposition of the transferred or lost worth, it may be reliably stated that the communities and landowners within the Preservation District will lose property value and economic worth in the range of $160 Billion dollars.

End discussion of H&H February 14, 2006 report and the Department's responses to Commentator comments regarding the then proposed Act Rules.

Impact on Property Value

The Client has requested that the Act and Act Rules be evaluated for their impact on property values. For the purpose of analysis, "property" is separated into "premises" (buildings and supporting land) and "land" where the term is intended to mean vacant land or land having a Highest and Best Use for redevelopment as though vacant.

Impact on Premises:

The impact that the Act and Act Rules have had on premises is diverse.

Generally speaking, the Law of Supply & Demand supports that where demand exists and a commodity's availability is limited, its value will increase. It may therefore be reasonably stated that existing homes within the Highlands Preservation District should be expected to increase in value at least commensurate with the general market as a whole.

To the extent that an existing home requires renovation or expansion, the Act and Act Rules contain a complex series of exemptions that facilitate work of this type. As each case is specific, the impact of the Act and Act Rules on individual premise is too specific for general comment herein.

Impact on Land:

The impact that the Act and Act Rules have on vacant land is extremely complex. There are many variables including human elements that collectively render each property unique. In the context of this appraisal and consulting assignment it is incumbent upon H&H to elucidate such areas as may be sufficiently common to facilitate generalization.

The first demonstration, identified as "**Development Rights Study**" deals with the value of development rights as a percentage of gross property values.

The second demonstration, identified as "**Warren County Development Rights Summary**" deals with the value of development rights as a percentage of gross property values but also offers insight relative to the difference in impact experienced by properties within and beyond the Preservation District.

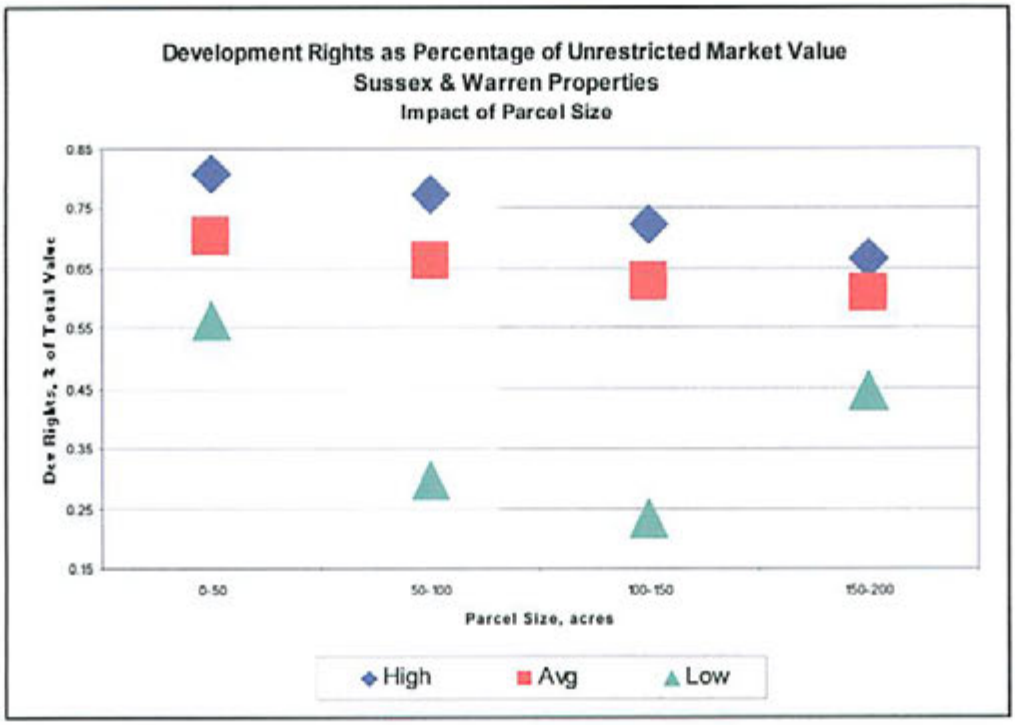
Development Rights Study:

This study was conducted to provide a pictorial demonstration referencing the impact of various factors on the value of Development Rights being acquired through the Farmland Preservation Program. The study utilized data developed through direct appraisal of properties by Holzhauer & Holenstein, LLC within Warren and Sussex Counties for the State Agricultural Development Committee and for private clients. The study covered the years 2002 through 2005, though the bulk of the data was developed between 2003 and 2004.

Development Rights Value is calculated as the mathematical difference between "Unrestricted Market Value" and "Restricted Market Value" as defined (addenda) consistent with the NJ Farmland Preservation Program Appraisal Standards.

Within the following point graph, the Development Rights Value was expressed as a percentage of Unrestricted Market Value for each parcel appraised. The graph is further differentiated to compare the relationship of Parcel Size and the DRV/Unrestricted Market Value percentage figures.

The data was initially sorted based on parcel size and then grouped as to acreage ranges from 0-50 acres, 50-100 acres, 100-150 acres, and 150 to 200 acres. Within these groupings, the maximum, minimum and average values were determined. The following graph indicates the range of percentage value attributable to development rights when sorted as a function of parcel size:



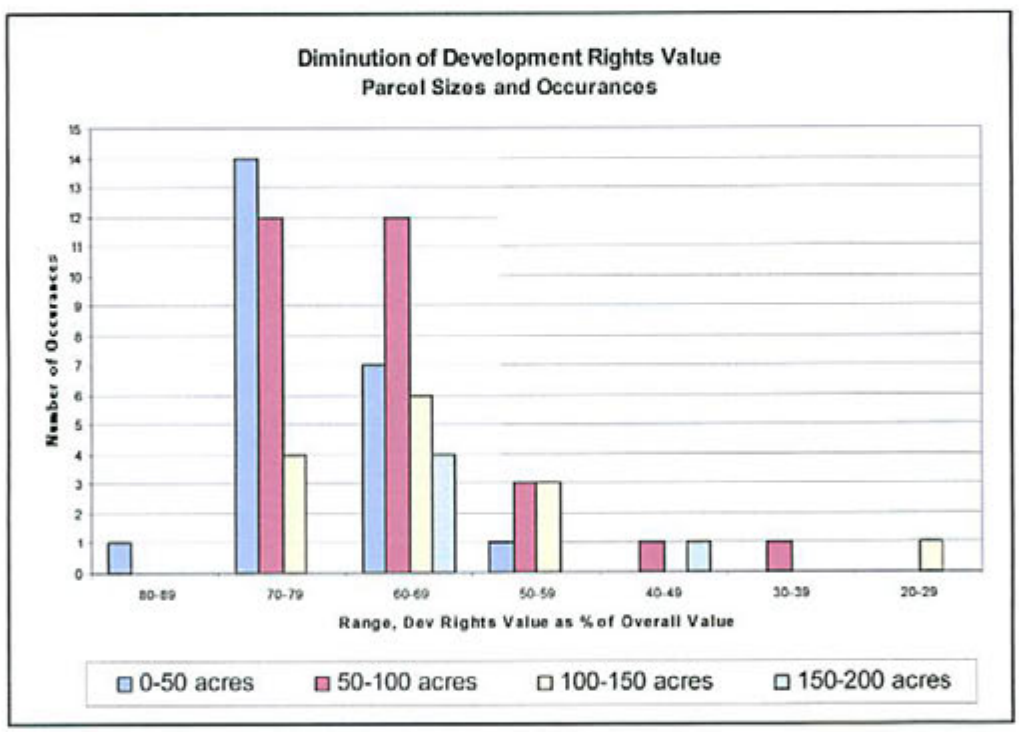
The graph indicates that a distribution of values is established within the various parcel size ranges.

H&H understanding of this data supports that the range among percentage values for a given group of properties (grouped by size) is due primarily to the quality of the parcels with respect to soils, topography, wetlands and the permitted density as determined by zoning and legislative restrictions.

The graph further indicates that development rights value, as a percentage of gross unrestricted value, tends to trend downward as gross parcel sizes become larger.

The graph supports a conclusion that development rights value as a function of unrestricted market value ranges from an approximate high differential of 65% to 80% to low differential of 20% to 55% with the average of all parcels studied ranging from 60% to 70%.

The previous graph prompted the question as to how the data points are distributed. In response, the following bar chart was developed:



The chart depicts the number of occurrences or distribution within the various percentile ranges for the studied parcels. The trend is confirmed that development rights value as a percentage of unrestricted market value tends to decrease as parcel size increases. Further, it is evident that most of the properties surveyed fell within the 60% to 80% range.

Conclusion: This study, based on appraisals and analysis that either pre-date the Highlands Act or were performed for the SADC completely independent of the Act and/or Act Rules clearly depicts that approximately 60% to 80% of property value is attributable to development rights. As these development rights were eradicated by the Act and Act Rules, it follows that the sample properties typically would lose 60% to 80% of their pre-Act value in response to the Act.

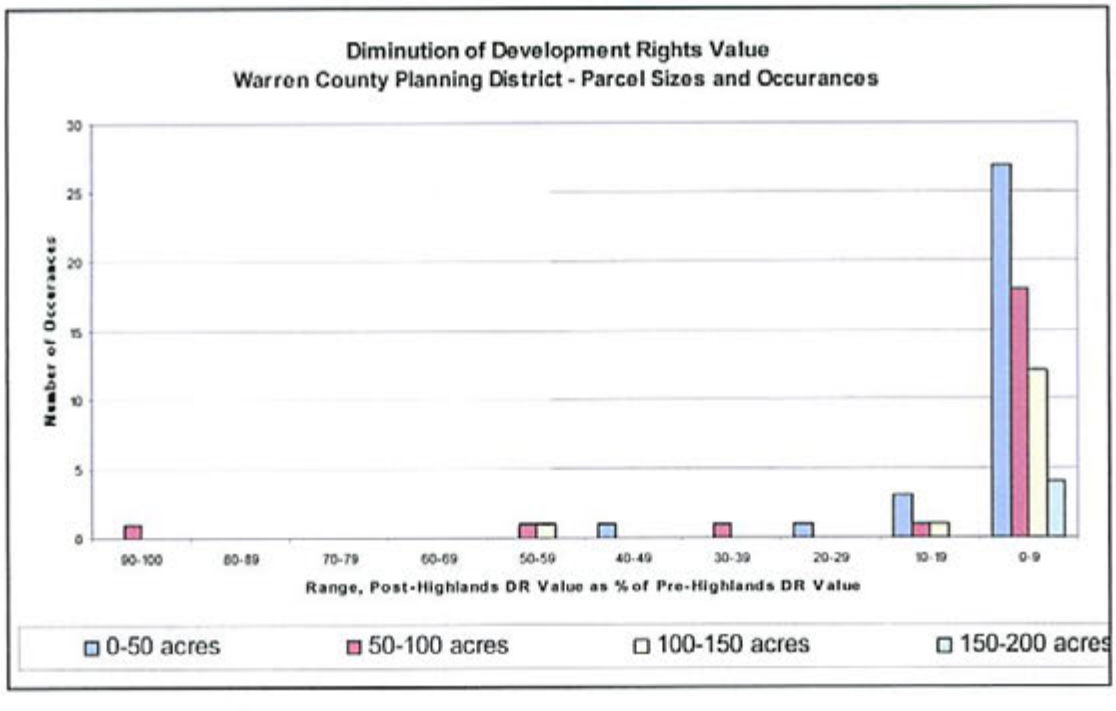
Warren County Development Rights Summary

Following are two point graphs and four bar charts demonstrating statistical data gleaned from a sample of 60 appraisals, 24 of which address property located within the Preservation District and 36 of which address property located beyond the Preservation district (mainly in the Planning District).

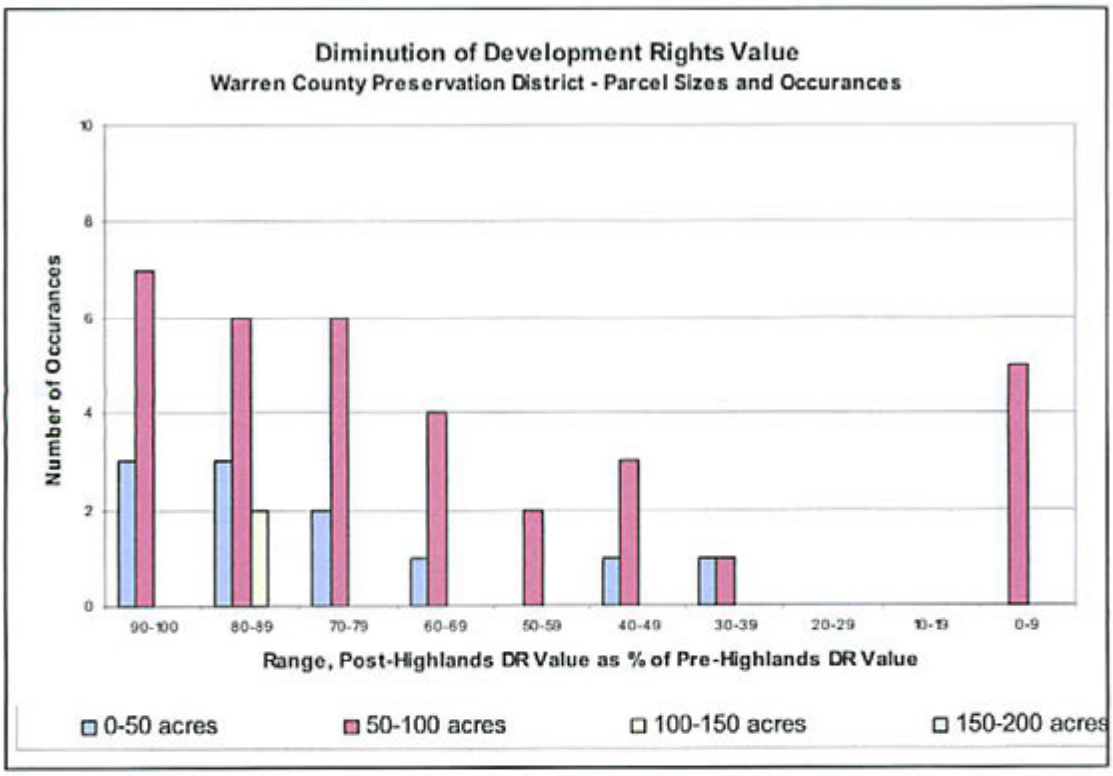
These appraisals were commissioned by the Warren County Department of Land Preservation ("WCDLP") for the 2006, 2007 and 2008 ADC acquisition rounds. The appraisals were hence conducted during 2005, 2006, and 2007. H&H, LLC prepared seven of the 60 appraisals.

The basic data reported by these charts and graphs has been compiled by WCDLP in a cursory report titled "Property Value Analysis". The source copy is maintained within my files.

The interesting aspect of this data that differs from previous studies is its point in time (well after passage of the Act) and that WCDLP compiled the data separately for lands within the Preservation District and beyond the same. Comparison of the differences among properties and appraisal results is demonstrated by the immediately following "compilation" bar charts (two).



The above chart demonstrates that, of the properties surveyed **outside the Preservation District**, the Act and Act Rules marginally affected the value of imputed development rights with the largest occurrence falling below 10%. This data indicates that lands outside the Preservation District are not significantly affected by the Act or Act Rules. This bar chart is contrasted with the following chart that depicts the same data for properties located **within the Preservation District**.



The above chart demonstrates that the imputed value of development rights for property located within the Preservation Area is severely affected by the Act and Act Rules.

Essentially, the greatest number of occurrences demonstrates a loss in development rights' value from 60% to 90% and the majority of properties surveyed experienced a loss in development rights value from 70% to 99%.

Interim Conclusion

When comparing property located within the Preservation District to lands in the Planning District and beyond, it is evident that, if an allowance for "other factors" of 10% is applied to the data, it may be reasonably concluded that the Act and Act Rules are typically responsible for a loss of development rights value ranging from 60% to 89% of the pre-Act value.

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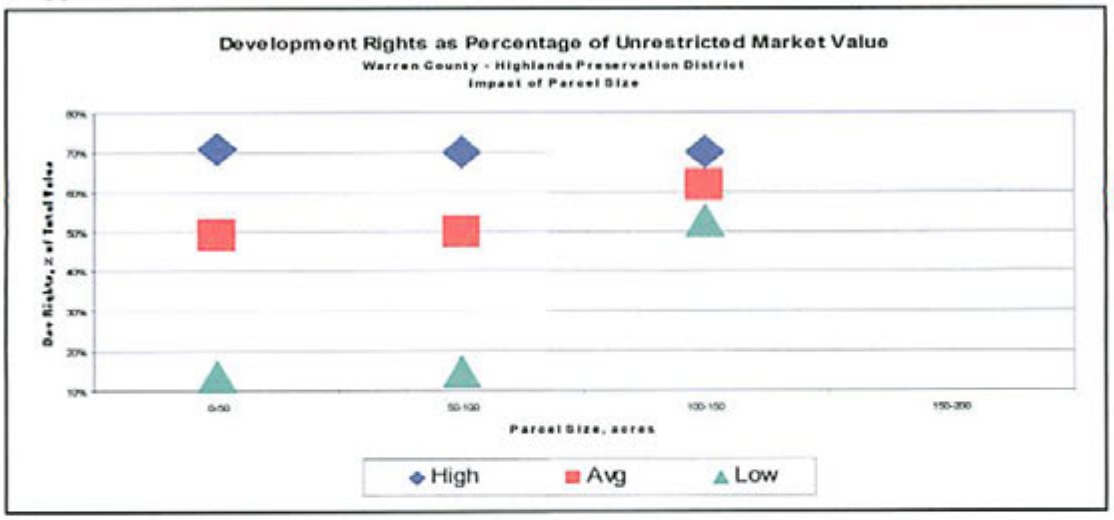
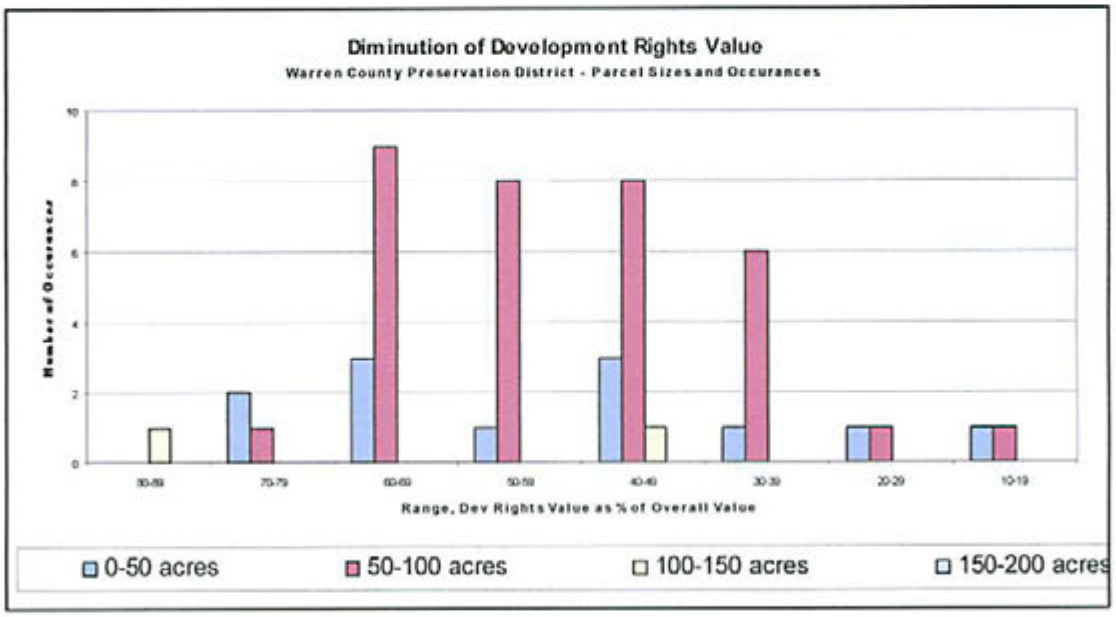
Continuing:

The following two point graphs and bar charts depict the "raw" data relied upon within the immediately preceding bar graphs.

The first point graph (below) demonstrates the array of data for surveyed properties located within the Highlands Preservation District. This data is based on appraisals conducted during 2005, 2006, & 2007 that employ the "Lookback Provision" of the Act which requires that property be appraised pursuant to the rules and regulations in effect as of January 1, 2004. Under the Lookback Provision, the development rights eradicated by the Act are still part of the bundle of rights appraised.

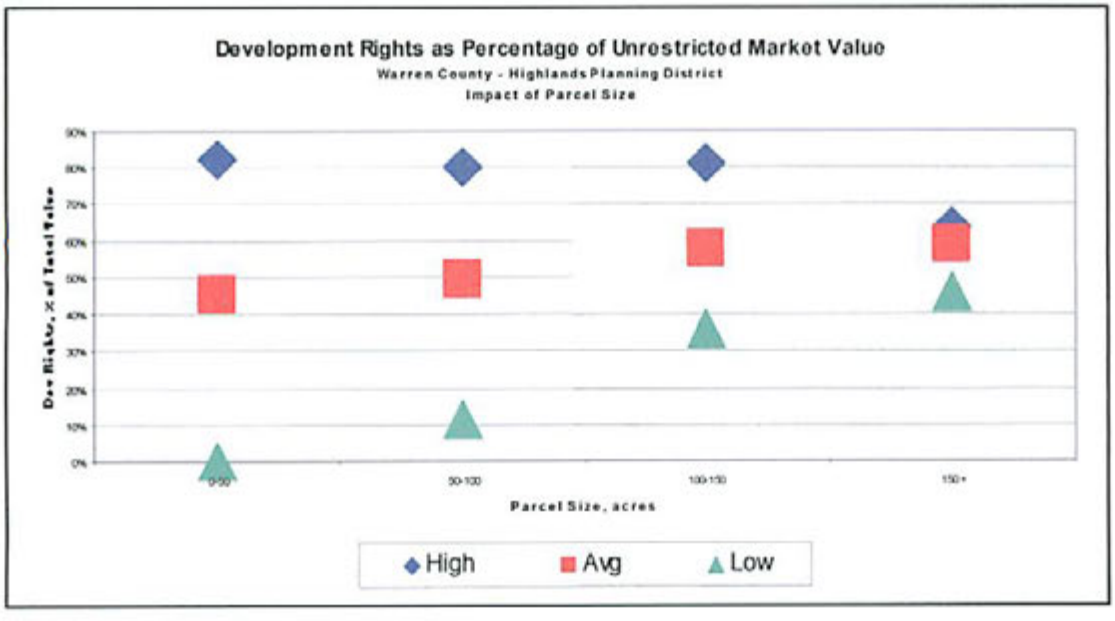


This data demonstrates that the value of development rights as a function of Unrestricted Market Value ranges from 0% to 80%. The data is distributed within the bar chart, following:

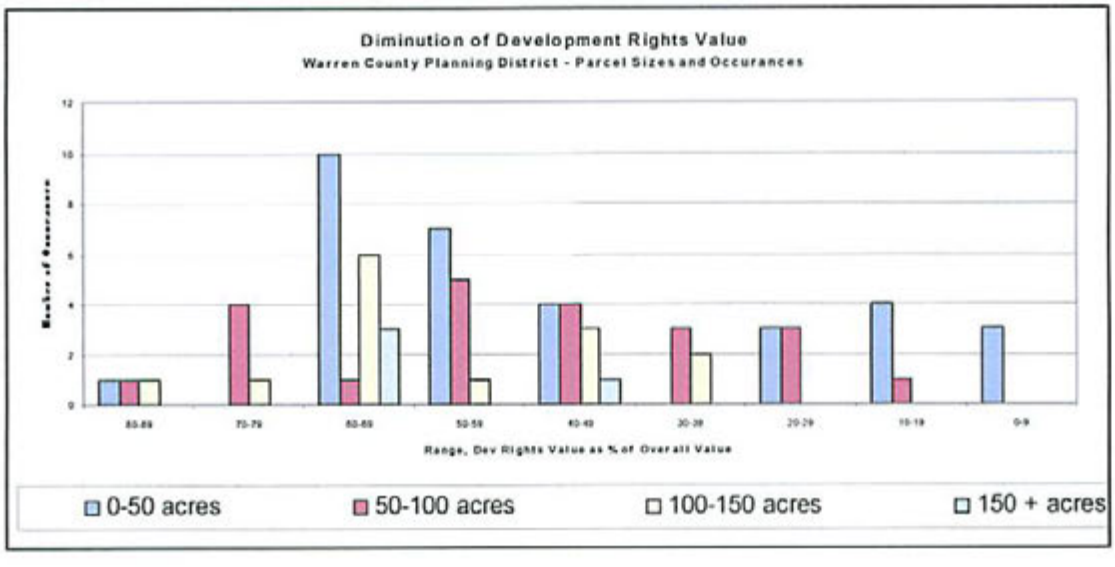


The bar chart depicts that in the post-Act years (2005-2007) that the residual value of property (net of development rights) has increased. The corresponding incremental value of property value attributable to the worth of development rights typically ranges from 30% to 70% and the frequency of occurrence is more evenly distributed to the middle of the chart.

This next point graph demonstrates the array of data for survey properties located within the Highlands Planning District and beyond. This data is also based on appraisals conducted during 2005, 2006, & 2007 that employ the "Lookback Provision" of the Act. As previously noted, the Lookback Provision only affects the results of these appraisals by a factor typically less than 10%.



This data demonstrates that the value of development rights as a function of Unrestricted Market Value ranges from 0% to 80%. The data is distributed within the bar chart, following:



The bar chart depicts that in the post-Act years (2005-2007) that the residual value of property (net of development rights) has increased. The corresponding incremental value of property value attributable to the worth of development rights typically ranges from 30% to 70% and the frequency of occurrence is more evenly distributed to the middle of the chart.

RECONCILLIATION
& FINAL CONCLUSIONS

Introduction

The Act and Act Rules are complicated.

The real estate encountered within Northern NJ, in particular, the Preservation and Planning Districts, is diverse.

A fundamental axiom of real estate appraisal practice is that land has value and improvements contribute to value.

The value of land is based on its economic utility for some purpose.

The economic utility of land is base on its physical, functional, and legal uses. The use that demonstrates the highest value is said to be the "Highest & Best Use".

When land that is physically and functionally suited to development is legally prohibited from development, it will be less valuable than other land having the same physical and functional characteristics that is not legally prohibited from being developed.

The Act and Act Rules legally prohibit many of the heretofore legally permitted uses of land at the previously prescribed densities within the Highlands Preservation District.

Reconciliation

Comments # 666 & # 719 and associated Department Responses were presented above because the same represent candid objection to the Act and Act Rules and objective evidence of the Act and Act Rules' impact on property values. These estimates were developed using the Department's figures and the Department's methodology and the comments have been reviewed by the Department with responses published; the Department's responses have been rebutted.

The Client has requested an opinion of the gross diminution in property values experienced by the Preservation District in response to the Act and Act Rules.

Accepting that the direct impact on lost development (land & buildings for 215,000 units of housing) is reasonably stated as of 2006 @ $80 Billion Dollars, the question becomes what portion of that figure is simply attributable to the land.

A "Builder's Cost Ratio" ("BCR") is a rule of thumb relied upon when developing property. Simply stated, a builder will target land as a percentage of the finished residential unit sale price. For residential housing in suburban and rural areas similar to the Preservation District, an acceptable BCR typically ranges from approximately 25% to 35%. Within more heavily suburban areas, the scarcity (and hence cost) of land will typically force the BCR to levels of 45%.

This form of cursory analysis is supported by the actions of typical market participants and, most of the residential housing data loaded for all the CAMA systems currently on file within the State's listing of Class 2 properties (perhaps 1,000,000 entries).

Application of a BCR to practical circumstances includes that if a finished residential unit sells for $100,000 the contributory value of the land will range from $25,000 to $35,000.

Adopting the most conservative estimate of BCR application @ 25% and the estimated total cost of lost development @ $80 Billion Dollars, it is evident that the implicated loss in land value is approximately $20 Billion Dollars net of any consideration for the residual value of land that is impacted by the Act and Act Rules.

The residual value of lands impacted by the Act and Act Rules is well supported by independent evaluation as ranging from 70% to 80% of pre-Act values.

I conclude that the residual value of lands within the Preservation District is reasonably stated at approximately 25% of pre-Act values and that the resultant loss in property value within the Preservation District *due to the Act and Act Rules* (as of 2006) is reasonably estimated @ $15 Billion Dollars (75% of $20 Billion).

Summary of Conclusions

1. Based on information provided by the Department as supplemented by the independent investigation and analysis of H&H, LLC, effective 2006, approximately **$80 Billion Dollars** of real estate development will not occur within the Preservation District.

2. A portion of the $80 Billion in development will be transferred from the Preservation District to other areas within NJ deemed "appropriate" by NJDEP that otherwise indicate an interest in "taking on" additional development. The balance of the development dollars will apparently not be invested in NJ.

3. Based on the Department's analysis and methods of presenting data, the $80 Billion loss in development will have a $160 Billion Dollar impact on the economy of the Highlands Preservation District Communities. To the extent that the development is never conducted in NJ, the impact may eventually apply to NJ in a macro sense.

4. Of the $80 Billion Dollar impact experienced by the Preservation District Communities, approximately $15 Billion Dollars is directly attributable to a diminution in land value. This loss in land value is borne by, and in many cases has a devastating affect upon, the constituent owners of property within the Highlands Preservation District.

5. On average, vacant and minimally improved properties located within the Preservation District have lost 70% to 80% of value depending upon many factors. The principal considerations in estimating loss to specific property are the property's physical and functional characteristics, particularly gross size.

CERTIFICATION

This consulting report is certified to the Intended Users only; it is restricted for use by the Client & Intended User(s) to assist with professional interpretation and opinion regarding the Act and Act Rules. I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct.
2. The reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional work.
3. I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved.
4. My compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result or the occurrence of a subsequent event.
5. As an appraiser I am acting in an independent capacity; the appraisal assignment is not based upon a requested minimum valuation, a specific valuation, or approval of a loan.
6. My analyses, opinions and conclusions were developed, and this appraisal has been prepared in conformity with the Code of Professional Ethics and the Standards of Professional Appraisal Practice of the Appraisal Institute, the Uniform Standards of Professional Appraisal Practice published by the Appraisal Foundation.
7. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
8. As of the date of this report the undersigned has completed the requirements of the continuing education program of the Appraisal Institute and Appraisal Foundation.
9. I am generally familiar the Highlands Region properties by type and location.
10. No one provided significant professional assistance to the report signatory with respect to the reported conclusions.
11. That I am in compliance with the Competency Provision of USPAP and have sufficient education and experience to perform an appraisal of the subject property.
12. That my opinions regarding the Act-Rules are as reported within the body of this letter-report.

Neither all nor any part of the contents of this report (especially any conclusions as to value, the identity of the appraiser, the firm with which he is connected, or any reference to the Appraisal Institute or to the MAI designation) shall be disseminated to the public through advertising media, public relations media, news media, sales media, or any other public means of communication without the prior written consent and approval of the undersigned.

MEH via Electronic 10/10/07
MICHAEL E. HOLENSTEIN, MAI, CTA
SCGREA: NY, NJ-RG01234, Pa-GA1733-R

ASSUMPTIONS AND LIMITING CONDITIONS

1. No survey of the subject property has been prepared by the appraiser. I assume no responsibility for matters legal in character nor do I render any opinion as to the title, which is assumed to be good and marketable unless otherwise stated.

2. The property is appraised free and clear of any or all liens or encumbrances unless otherwise stated. Responsible ownership and competent property management are assumed.

3. The sketches, drawings, photos and photocopies within this report are included to assist the reader in visualizing the property. No responsibility in connection with these exhibits or the referenced work of others is assumed.

4. The information furnished by others including but not limited to surveys, maps, site plans, building plans, leases, and income information as footnoted within this report, is believed to be reliable and is verified whenever possible. However, no warranty is given for its accuracy.

5. It is assumed that there is full compliance with all applicable federal, state, and local environmental regulations and laws unless noncompliance is stated, defined, and considered in the appraisal report.

6. It is assumed that all applicable zoning regulations and use restrictions have been complied with and that the subject property is a legal, conforming use within the zone unless non-conformity has been otherwise stated and considered within the report.

7. It is assumed that all required licenses, certificates of occupancy, consents, or other legislative or administrative authority from any local, state, or national government or private entity or organization have been or can be obtained or renewed for any use on which the value estimate contained in this report is based unless otherwise stated. This assumption specifically includes the requirements of the Industrial Site Recovery Act (ISRA), if applicable, and assumes the ability to convey the property with free title.

8. It is assumed that the utilization of the land and improvements is within the property's lines and that there is no encroachment or trespass relative to adjoining lands.

9. The distribution, if any, of the total valuation in this report between land and improvements applies only under the stated program of utilization. The separate allocations for land and buildings must not be used in conjunction with any other appraisal and are invalid if so used.

10. Any value estimates provided in the report apply to the entire property, and any proration or division of the total into fractional interests will invalidate the value estimate, unless such proration or division of interests has been set forth in the reports.

11. Any value estimates provided in this report are as of the date specified based upon the prevailing market conditions and are subject to fluctuations in accordance with such factors.

12. Unless otherwise stated in this report, the existence of hazardous substances, latent or subsurface defects, or environmental conditions, which may or may not be present on or about the property was not observed by the appraiser nor brought to the attention of the appraiser. The appraiser has no knowledge of the existence of such materials/conditions on or in the property. The appraiser, however, is not qualified to detect such substances/conditions. The presence of substances such as, but not limited to, asbestos, urea-formaldehyde foam insulation, radon gas, fuel leaks, lead-based paints or other potentially hazardous materials or conditions such as sink holes, earthquake faults, underground caverns or streams, may affect the value of the property. The value estimate is predicated on the assumption that there is no such material or condition on or in the property or in close proximity to the property that would cause a loss in value. No responsibility is assumed for any such materials or conditions, nor for any expertise or engineering knowledge required to discover them. The client is urged to retain an expert in this field, if desired.

13. The value estimate is further predicated upon the assumption that there are no endangered species habitat, historical/archeological/cultural sites, burial grounds, or critical natural features within the boundaries of this property.

14. The data used in this report has been secured from sources considered reliable and has been verified to the extent possible by this appraiser; however, correctness is not guaranteed.

15. Possession and use of this report by the Client may be governed by the Freedom of Information Act. Procedurally, the report is prepared as a complete document for the stated use by the stated user. Unintended users and users that do not possess proper appraisal qualifications are advised that the data, methodology, conclusions, and opinions provided by the report may not be applicable or reliable if used outside the stated context. The possession and use of this report and all conclusions to value is strictly governed by the professional relationship between client and appraiser.

16. Failure to satisfy any and all outstanding appraisal fees pursuant to the agreed scope of the assignment shall render all conclusions and certifications null and void.

PROFESSIONAL QUALIFICATIONS OF
MICHAEL E. HOLENSTEIN, MAI, CTA, SCGREA

Business & Education:

Current	♦	HOLZHAUER&HOLENSTEIN, LLC ; Principal Member (1998-)
Prior	♦	LIN-HOLZ ADVISORY GROUP, LLC ; Principal Member (1997&1998) Employed by R.L.Holenstein, MAI as an Appraiser and Licensed R.E. Agent (1987-1996)
2001	♦	State of New York Certified General Real Estate Appraiser (SCGREA #46000039750)
1999	♦	Commonwealth of Pennsylvania Certified General Real Estate Appraiser (SCGREA #GA1733R)
1995	♦	Designated as a Member of the Appraisal Institute (MAI), Member #10824.
1993	♦	New Jersey State Certified General Real Estate Appraiser (SCGREA #RG01234)
	♦	Certified by the State of New Jersey as a Tax Assessor (CTA)
1989	♦	Graduated Upsala College Cum Laude with BA and BS degrees in Business & Management
1987	♦	Licensed by the State of New Jersey as a Real Estate Salesperson
1983-87	♦	United States Marine Corps, Active Duty Status. Stationed in the Continental U.S. and Asia. Occupational specialties included Air Frames Structural Mechanic (MOS-6143), CDI (Collateral Duty Inspector), and NDI (Non-Destructive Inspector). Promoted meritoriously four times to E5. Awarded Navy Achievement Medal in December, 1986 in recognition for outstanding service while stationed in South Korea, ten Meritorious Masts, three Letters of Commendation, Certificate of Commendation and selected as Outstanding Marine NCO, 1st Marine Aircraft Wing.

Seminars/Conferences:

- NJAC, Tax Bd. Commissioners & Administrators; Annual Education Seminar/Conference, (1995 -)
- Metro NJ Chapter, Appraisal Institute, Annual Princeton Conference, (1987 -)
- Dynamics of Office Building Valuation - Appraisal Institute
- Condemnation Appraisal Practices Seminar - Appraisal Institute
- ACOE Wetlands Delineator Courses - Rutgers Extension
- Attacking/Defending Appraisals in Litigation - Appraisal Institute
- Appraiser as an Expert Witness - Appraisal Institute
- Handling Eminent Domain & Regulatory Taking Cases
- Land Use Law Conference
- Advanced Expert Witness Deposition Tactics NJ
- Appraisal Consulting: A Solutions Approach for Professionals
- NJ Real Estate Title law, Problems & Solutions
- Keys to Effective Witness Examination, NJ
- Appraisal Standards for Federal Land Acquisitions ("Yellow Book")
- Eminent Domain & Regulatory Takings, Update 2005

Michael E. Holenstein has practiced Real Estate Appraisal and performed Consulting Services as his sole occupation beginning in 1987. Since completing his primary appraisal education, his essential focus has been the valuation of partial interests, real property rights, condemnation appraisal, subdivision analysis, tax appeals, general fee appraisal, and a variety of consulting services including acquisition and development, feasibility, financing, estate management and partnership interests. His work has satisfied a variety of functions including matrimonial, probate, tax appeal, condemnation, pollution contamination and other legal proceedings, financing requirements and general asset valuation. A partial list of appraisal assignments include:

Residences
Farms and Acreage
Commercial Properties
Industrial Properties
Institutional Properties
Multi-Family Properties
Highest and Best Use
Contamination Impact
Islands
Tax Appeals
Partial Takings
Entire Takings
Feasibility Studies
Subdivision Analysis
Easement Valuation
Easement Impact Valuation
Rights-of-Way
Review Appraisals

Expert Testimony:

- State of NJ Tax, Superior, & Administrative Law Courts; Morris, Sussex, and Warren County Tax Boards; Various Condemning Authority Commissioner Boards; Various Municipal Planning & Zoning Boards

Professional Affiliations&Community Service:

- Member – Foundation Board, Newton Memorial Hospital (2005 -)
- Member - Board of Directors, Metro-NJ Chapter, Appraisal Institute (1997-99)
- Member - Newton Rotary Club (1987-99)
- Member - Executive Board of Directors, Morris/Sussex Boy Scout Council (1992 - 1995, 1997)
- Member - Executive Board of Directors, Greater Newton Chamber of Commerce (1992 - 1997: President 1996 - 1997)
- Committeeman - Newton Economic Development Committee (1993 - 1996)
- Associate Member – Garden State & Bergen Multiple Listing Services (1987 -)

References:

Federal Acquisitions:

- Pamela McLay, National Park Service, 215-597-7700
- William McLaughlin, NPS, 215-597-4940
- Susan P. Russo, ARA, USDI, 413-253-8529
- Mary Ellen Bryant, Appraisal Services Directorate, 413-253-8529

Litigation Support Services:

- Lawrence B. Litwin, Esq., 973-538-4220 (Condemnation/General)
- Martin F. Murphy, Esq., Johnson, Murphy, Hubner..., 973-835-0100 (Condemnation, General)
- George P. Ljutich, Esq. (DAG), NJDOT, 609-292-5936 (Adversary in Condemnation)
- Thomas Olsen, Anthony DellaPelle, Esq, Mckirdy & Riskin, PC, 973-539-8900 (Condemnation)
- Jeffery D.Gordon, Esq., Archer & Greiner, PC, 609-580-3713 (Tax, General, Stigma Damages)

ADDENDA

Appreciation Study

Appreciation Study - Highlands Preservation Districts - Hunterdon, Morris & Warren Counties

Yearly Directors Ratio changes from 2000 through 2006 for following Municipalities

Year	Bloomsbury Boro		Lebanon Twp		Boonton Twp		Jefferson Twp		Mt Olive Twp		Oxford Twp	
2000	103.23	--	100.23	--	92.22	--	91.03	--	99.34	--	95.48	--
2001	96.91	6.5%	94.64	5.9%	85.46	7.9%	87.13	4.5%	95.66	3.8%	96.26	-0.8%
2002	89.88	7.8%	91.2	3.8%	78.71	8.6%	81.39	7.1%	90.72	5.4%	90.28	6.6%
2003	83.98	7.0%	83.64	9.0%	74.86	5.1%	74.98	8.5%	87.64	3.5%	82.22	9.8%
2004	74.89	12.1%	75.02	11.5%	67.95	10.2%	66.26	13.2%	80.47	8.9%	72.1	14.0%
2005	66.44	12.7%	69.67	7.7%	61.82	9.9%	58.82	12.6%	70.6	14.0%	64.49	11.8%
2006	59.13	12.4%	59.4	17.3%	55.72	10.9%	52.4	12.3%	59.7	18.3%	57.5	12.2%

Cumulative Appreciation for respective Municipalities from 2000 to 2006 is:

74.6%	68.7%	65.5%	73.7%	66.4%	66.1%

Avg Cum Appr, 2000 to 2006 = 0.69 **Appreciated Value = $220,504 x 1.69 = $ 373,018**

Median Home Price Analysis

Next page

County & Municipality Demographics Data

County	2000 population	total households	persons/ housesold	Median SF Home Value
Bergen	884,118	330,817	2.64	$ 250,300
Hunterdon	121,989	43,678	2.69	$ 245,000
Morris	470,212	169,711	2.72	$ 257,400
Passaic	489,049	163,856	2.92	$ 190,600
Somerset	311,600	108,984	2.69	$ 235,000
Sussex	144,166	50,831	2.80	$ 157,700
Warren	109,219	38,660	2.61	$ 155,500

Municipality	2000 population	total households	persons/ housesold	Median SF Home Value
Mahwah Tp	24,062	9,340	2.43	$ 334,100
Oakland Bo	12,466	4,255	2.88	$ 245,300
Alexandria Tp	4,698	1,535	2.95	$ 274,100
Bethlehem Tp	3,820	1,266	3.02	$ 278,400
Bloomsbury Bo	886	322	2.74	$ 172,800
Califon Bo	1,055	401	2.63	$ 220,900
Clinton	2,632	1,068	2.46	$ 222,100
Clinton Tp	12,957	4,129	2.82	$ 283,900
Glen Gardner Bo	1,902	805	2.33	$ 170,700
Hampton Bo	1,546	559	2.58	$ 165,200
Holland Tp	5,124	1,881	2.72	$ 199,000
Lebanon Tp	5,816	1,963	2.79	$ 233,400
Tewksbury Tp	5,541	1,986	2.79	$ 461,200
Union Tp	6,160	1,666	2.61	$ 285,200
Boonton Tp	4,287	1,476	2.78	$ 322,600
Chester Tp	7,282	2,323	3.05	$ 407,900
Jefferson Tp	19,717	7,131	2.76	$ 180,400
Kinnelon Bo	9,365	3,062	3.06	$ 354,000
Montville Tp	20,839	7,380	2.80	$ 346,600
Mt Arlington Bo	4,663	1,918	2.42	$ 183,700
Mt Olive Tp	24,193	9,068	2.66	$ 197,800
Pequannock Tp	13,888	5,026	2.76	$ 246,100
Randolph Tp	24,847	8,679	2.86	$ 329,800
Riverdale Bo	2,498	919	2.68	$ 210,200
Rockaway Tp	22,930	8,108	2.82	$ 206,200
Roxbury Tp	23,883	8,364	2.84	$ 207,400
Washington Tp	17,592	5,755	3.02	$ 279,300
Bloomingdale Bo	7,610	2,847	2.63	$ 177,000
Ringwood Bo	12,396	4,108	3.00	$ 193,400
Wanaque Bo	10,266	3,444	2.86	$ 172,100
West Milford Tp	26,410	9,190	2.84	$ 171,200
Bedminster Tp	8,302	4,235	1.96	$ 228,000
Byram Tp	8,254	2,833	2.91	$ 175,300
Green Tp	3,220	1,046	3.07	$ 182,500
Hardyston Tp	6,171	2,319	2.66	$ 152,300
Hopatcong Bo	15,888	5,656	2.81	$ 141,300
Sparta Tp	18,080	6,225	2.90	$ 222,700
Vernon Tp	24,686	8,368	2.95	$ 150,800
Allamuchy Tp	3,877	1,692	2.28	$ 192,500
Franklin Tp	2,768	972	2.84	$ 176,200
Greenwich Tp	4,365	1,421	3.07	$ 233,300
Harmony Tp	2,729	1,010	2.68	$ 156,000
Independence Tp	5,603	2,146	2.61	$ 169,500
Liberty Tp	2,765	980	2.79	$ 169,600
Lopatcong Tp	5,765	2,143	2.55	$ 156,600
Mansfield Tp	6,653	2,334	2.76	$ 177,200
Oxford Tp	2,307	886	2.60	$ 125,200
Pohatcong Tp	3,416	1,341	2.54	$ 135,100
Washington Tp	6,248	2,099	2.95	$ 185,400
White Tp	4,245	1,668	2.47	$ 163,700

Municipalities with land area in Preservation District = 50

Median Home price (average) = $ 220,504

Value Definitions

MARKET VALUE (unrestricted) is defined as:

"...the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is consummation of a sale as of a specified date and passing of title from seller to buyer under conditions whereby:

(1) Buyer and seller are typically motivated
(2) Both parties are well informed or well advised, and each acting in what he considers his own best interest
(3) A reasonable time is allowed for exposure in the open market
(4) Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto
(5) The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale."

Source: Federal Register, vol. 55, no. 163, August 1990, pages 34228 and 34229 & USPAP, 2004 edition.

MARKET VALUE (restricted) is defined as:

Market value of a property (as defined above) but subject to the deed restrictions placed on the title of a property as set fourth in N.J.A.C.2:76-6.15. The deed restriction passes with the land in perpetuity regardless of the owner. This term may be synonymous with agricultural market value although in areas under heavy development pressure or in more exclusive gentrified areas an increment of value may be inherent for residential and/or recreational uses with agricultural use being secondary.

Source: The Dictionary of Real Estate Appraisal, 4rd Edition

DEVELOPMENT EASEMENT is defined as:

The Market Value of a property less the Market Value Restricted of that property is equivalent to the value of the Development Easement.

Source: The New Jersey Farmland Preservation Program Handbook

Act Rules re-adoption with comments & responses (excerpts)

NOTE: THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WILL BE PUBLISHED IN THE DECEMBER 4, 2006, NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

ENVIRONMENTAL PROTECTION

LAND USE MANAGEMENT

LAND USE REGULATION

Highlands Water Protection and Planning Act Rules

Readoption with amendments:	N.J.A.C. 7:38
Proposed:	December 19, 2005 37 N.J.R. 4767(a)
Adopted:	, 2006 by Lisa P. Jackson, Commissioner, Department of Environmental Protection
Filed:	, 2006 as R. d. with substantive and technical change not requiring additional public notice and comment (see N.J.A.C. 1:30-6.3)

Authority: N.J.S.A. 13:20-1 et seq.; 13:1D-1 et seq.; 13:1B-15.128 et seq.; 13:9B-1 et seq.; 23:2A-1 et seq.; 58:1A-1 et seq.; 58:10A-1 et seq.; 58:11-23 et seq.; 58:11A-1 et seq.; 58:12A-1 et seq.; and 58:16A-50 et seq.

DEP Docket Number:	39-05-11/578
Effective Date:	
Expiration Date:	

The Department of Environmental Protection is readopting with amendments the Highlands Water Protection and Planning Act rules, N.J.A.C. 7:38. The proposal was published on December 19, 2005. The comment period closed on February 17, 2006.

1

NOTE: THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WILL BE PUBLISHED IN THE DECEMBER 4, 2006, NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

Summary of Hearing Officer's Recommendation and Agency Response:

The Department held a public hearing on the proposal on January 25, 2006, at 4:00 P.M., at the Highlands Council offices in Chester, New Jersey. Susan Lockwood and Mark Mauriello were the hearing officers. Thirty-three people attended and 28 gave testimony. The hearing officers recommended that the proposal be adopted as proposed with the changes described below in the summary of responses to comments. The Department accepts the recommendation.

The hearing record is available for inspection in accordance with applicable law by contacting:

Office of Legal Affairs
Attn: DEP Docket No. 39-05-11/578
Department of Environmental Protection
P.O. Box 402
Trenton, New Jersey, 08625-0402.

Summary of Public Comments and Agency Responses

The Department accepted comments on the proposal through February 17, 2006. One-hundred fifteen people provided individual written and/or oral comments. Four-hundred sixty-five people submitted form letters. The following individuals provided individual comments:

1. Anderson, Joanne
2. Anderson, John W.
3. Anderson, Wayne
4. Baker, Michael J.
5. Bartel, Constance
6. Best, Robert, E.
7. Best, Ruth M.
8. Bowman, Cynthia M.
9. Broadhurst, Ellen
10. Broadhurst, Hope
11. Broadhurst, Jeff

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12. Broadhurst, Tom
13. Buck, Susan
14. Canright, Mark
15. Christensen, Nancy
16. Collins, Jr., Thomas F. Vogel, Chait, Collins, and Schneider
17. Constantine, Diane M.; Sprint Spectrum and Nextel Corporation
18. Costa, Rosalind Pio
19. Davenport, Robert
20. Dilodovico, Anthony; Schoor Depalma
21. Donaldson, Lewis A.
22. Drysdale, Andrew
23. Drysdale, Lois
24. Dunn, Thomas W. Beattie Padovano representing Borough of Ringwood Planning Board
25. Farber, Joy; Association of New Jersey Environmental Commissions
26. Feller, Caroline E.
27. Filippone, Ella F.; Passaic River Coalition
28. Finke, Jean M.
29. Finke, Michael
30. Finke, Robert
31. Finke, Robert A.
32. Frey, Gertrude
33. Frey, Robert
34. Frey, Robert J.
35. Frey, Wilma; New Jersey Conservation Foundation
36. Gagne, Ed
37. Gagne, Penny
38. Gerish, Jay
39. Goger, Nicole
40. Gracie, Heather; Gracie & Harrigan Consulting Foresters, Inc.

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41. Harrigan, Christina; Gracie & Harrigan Consulting Foresters, Inc.
42. Kallesser, Steven; Gracie & Harrigan Consulting Foresters, Inc.
43. Kelsey, James;. Planning Board, Independence Township
44. Kern, Jerry and Sandi
45. Kessler, James C.
46. Kessler, James E.
47. Klumpp, Hank
48. Kraham, Susan J.; NJ Audubon Society
49. Kruger, Anne L.; Passaic River Coalition
50. Kushner, Ross. Pequannock River Coalition
51. LaHue, Michael P.
52. LaHue, Robin; The Freedom Group, L.P.
53. Leavens, III, William B.
54. Lee, Art
55. Longo, Richard A.
56. Mackey, Devlen
57. Mackey, Holly
58. Mackey, Robert
59. Maidens, Melinda B.; Jeffer, Hopkinson and Vogel
60. McGroarty, Chuck; Planning consultant for Mount Olive Township
61. McGuinness, Michael G.; National Association of Industrial and Office Properties
62. Michalenko, Thomas
63. Minervini, William P.
64. Morawski, Stephen H.; Tennessee Gas Pipeline Company
65. Motyka, Richard J.
66. Myers, Aimee Ashley; Morris County Board of Agriculture
67. Newhouse, Dave
68. Newton, Damien
69. Nieuwenhuis, Richard; President, NJ Farm Bureau
70. O'Hearn, William; Highlands Coalition

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this rulemaking are both for activities that are environmentally beneficial. Habitat enhancement activities result in more and better habitat for fish, wildlife and plant species. Stream bank stabilization helps to improve the health of a stream by eliminating sources of erosion and sedimentation that would otherwise have negative impacts on water quality both at the point of erosion and downstream. Further, while it may be true that all portions of all waters in the Highlands are not entirely accessible, recreation, including fishing, is a significant activity in the Highlands which will be positively affected by the types of activities covered by these two general permits. Consequently, the Department concludes that its general permits provide positive social impacts.

665. COMMENT: It is premature to state that there is a positive social impact from implementation of the rules. In addition, the positive or negative social affects must be characterized as "macro" (New Jersey proper) or "micro" relating to the communities within the preservation district. (85, 87)

RESPONSE: The Department is required to evaluate the social impact of every rule it proposes. Therefore, it cannot wait until the rule is in place to determine the social impact. The Department believes, however, that the social impact of the Highlands rules is positive in both the "macro" and "micro" sense, as described by the commenter. The Highlands rules further the goal of the Highlands Act to protect an essential source of drinking water and other exceptional natural resources such as clean air, contiguous forest lands, wetlands, pristine watersheds, and habitat for fauna and flora, and many sites of historic significance. These benefits accrue to those who live in the preservation area as well as to others in New Jersey. Therefore, the rules have an overall positive social benefit.

666. COMMENT: There is no evidence presented that conclusively demonstrates that the rules provide a macro social impact that is not redundant in the context of prior-existing rules and regulations. Further, the degree to which an impact will be realized is wholly dependant upon presupposed eventualities that have not occurred since adoption of the

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Act and may, or may not, occur outside the preservation district. Implementation of TDR's is an excellent example. (85, 87)

RESPONSE: The Highlands Act consolidates aspects of several existing programs, strengthens their protections, and adds some unique protection provisions as well. The result is a law that requires one thorough and comprehensive review of a proposed major Highlands development. Therefore, the Department does not agree that the social benefits of the Highlands Act are redundant with prior existing rules. The timing of the Department's regulations and the Regional Master Plan (RMP), as dictated by the Act, made it impossible for the Department to await completion of the RMP and transfer of development rights program before proposing its regulations. Therefore, the Department must view the Act in its entirety and presuppose that all provisions of the Act will be implemented as directed by the New Jersey Legislature.

However, as stated in response to previous comments, the Highlands Act contains more than TDR provisions to reduce its impacts on property owners, including an extensive list of exempt activities, the exclusion of agricultural and horticultural uses from the definition of "major Highlands development" thus keeping these activities unregulated by the Department, the requirement that agencies seeking to acquire land for open space and farmland preservation obtain pre- and post Highlands appraisals and negotiate using the higher value, and the provision of a waiver for the taking of property without just compensation if a Highlands approval has been denied and the owner can recognize no alternative use for the property.

667. COMMENT: The rules presuppose under social doctrine that the rights of the general populace exceed the rights of the individual. The purported social benefits realized by segments of the general populace, in particular the users of water resources generating from within the Highlands, are garnered at the expense of the private property owners who either live within, or own land within, the Highlands Region proper. (85, 87)

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RESPONSE: The Department is required to evaluate the economic impact of every rule it proposes. Therefore, it cannot wait until the rule is in place to determine the economic impact. The Department believes, however, that the economic impact of the Highlands rules is positive in both the "macro" and "micro" sense, as described by the commenter. The Highlands rules further the goal of the Highlands Act to protect an essential source of drinking water and other exceptional natural resources such as clean air, contiguous forest lands, wetlands, pristine watersheds, and habitat for fauna and flora, and many sites of historic significance, without the costs associated with water purification, wastewater treatment, flood control projects and other costly undertakings that would be required to accomplish such goals after land is developed. These benefits accrue to those who live in the preservation area as well as to others in New Jersey. Therefore, the rules have an overall positive economic benefit.

718. COMMENT: The "preliminary" affects of the Act and Act rules is ambiguous. Mechanisms intended by the Act to afford parity to affected property owners are not yet in place. These include TDR's. The effective implementation of TDR's is expected to take years with the market's acceptance of same being too speculative for credible consideration at this time. (85, 87)

RESPONSE: It is the Department's understanding that transfer of development rights (TDRs) programs will be implemented shortly after the Highlands Council adopts the Regional Master Plan, which the Department understands is expected to take place by December of 2006. The market will depend upon how the credits are assigned and the availability of receiving districts and that information is currently being discussed by the Highlands Council and with the public.

719. COMMENT: The net result of transferring development potential and associated economic impact value from the preservation district to areas outside the core is an effective transfer of property worth from owners within the preservation district to other private property owners. The order of magnitude for transferred value from one group of

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private individuals to another is demonstrated by the following model. The rules cite several different development and buildout scenarios as probable occurrences within the preservation area. These include that the potential dwelling units within the preservation area (at buildout) total 215,421 units (say 215,000). The independent analysis of Holzhauer & Holenstein, LLC (Real estate advisory services) supports that the 2006 median home value within the Highlands Region is reasonably $373,000. The impact that the rules have on property owners within the preservation area is estimated as follows:

215,000 units @ $373,000/unit = $80,195,000,000.

This calculation demonstrates an $80 Billion loss in ratable base for Highlands preservation area municipalities. Further, the above depiction does not account for other forms of development, for example, commercial and industrial. It also does not make a distinction among dwelling units as may be developed with other than single family residential homes. The "average economic multiplier" for the U.S. is cited within the rules as being 2X. Therefore, the cost to local economies resulting from the failure to construct and sell 215,000 dwelling units is estimated as follows:

$80.195Billion * Factor (2X) = $160 Billion Dollars

Given the methodology cited within the rules, the loss in sales and realty transfer tax, together with the lost jobs, and jobs spending multipliers results in the conclusion that the rules will have an astronomical impact on the economy and the ratable bases of the preservation area communities.

However, this statement is not necessarily true based on the same criticisms of the rules' cost-benefit analysis. The problem must be evaluated on a micro and macro basis. Therefore, it may be stated that Statewide, and over a period of time, the loss of ratable base, and the gross affects on the economy are likely to be negligible. The rules do not prevent development, the same are just redistributed. The absorption of the theorized dwelling units will be delayed due to the increased regulation and the time necessary to facilitate increased density potentials within "appropriate" areas for development but the gross demand for housing will eventually be met. What can be stated with certainty is that whatever economic benefit is received by areas outside the preservation area will

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come at the expense of the property owners and the local economies within the preservation area. (85, 87)

RESPONSE: For the reasons set forth at length in the economic impact analysis, the Department believes that the long-term statewide impact of the rules being readopted will be significantly positive rather than negligible or neutral. In terms of the asserted short-term redistributive impacts, the Department notes the following: (1) The commenters assume that the value of $373,000 per home can be extrapolated to new housing. However, as the supply of housing increases, the price of new housing may decline as a result of supply and demand effects and because as new housing is built, the areas in which the construction takes place will, by definition, become more congested and therefore less attractive to subsequent homebuyers. (2) To the extent that development occurs outside the preservation area, the communities in the preservation area will not have to bear the costs of development, for example, the cost of new roads, water and sewer lines, schools, fire and police protection, etc. To the extent such costs are avoided, communities in the preservation area may experience no net fiscal impact. (3) Some portion of the new housing would likely be affordable housing, which would likely have a lower average price than the existing median cited by the commenters. (4) Any change in sales tax or realty transfer tax revenues is already reflected in the multiplier, and such changes would not constitute additional benefits or costs to communities in the preservation area. (5) The Department's rules contain several exemptions to permit single-family dwellings so the estimated loss of 215,000 units is an obvious overestimate. To date, the Department has confirmed 351 exemptions. (6) The Department's regulations may result in some level of reduction in value for landowners in the Highlands but does not deny all use. Consequently, municipalities will not assess these lots as having zero value. (7) A transfer of development program is yet to be developed and its potential positive impacts on property owners cannot be assessed.

For these reasons, the Department believes that any short-term redistributive impacts are likely to be significantly lower than the commenters project.

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2012 USDA Ag Census Data for N.J. Counties – Highlands

County	Av. Farm Acres	Net Cash Income Average per Farm	Earning Re Acre Average Farm
Bergen	24	$21,917	$913.21/A
Hunterdon	66	-$1,070	-$16.21/A
M'sex	87	$19,922	$229/A
Morris	40	$11,932	$298.30/A
Passaic	19	-$3,637	-$191.92/A
Somerset	87	-$4,919	-$56.54/A
Sussex	69	-$1,241	-$17.99/A
Warren	92	$26,650	$289.67/A

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Table 1. County Summary Highlights: 2012

[For meaning of abbreviations and symbols, see introductory text.]

Item	New Jersey	Atlantic	Bergen	Burlington	Camden	Cape May	Cumberland
Farms ..... number	9,071	402	60	838	175	152	583
Land in farms ..... acres	715,057	29,479	1,432	95,899	7,143	7,352	64,526
Average size of farm ..... acres	79	73	24	114	41	48	111
Median size of farm ..... acres	20	20	7	17	17	22	26
Estimated market value of land and buildings							
Average per farm ..... dollars	1,008,402	903,439	1,005,938	1,108,438	513,599	557,869	889,362
Average per acre ..... dollars	12,792	12,320	42,148	9,689	12,583	11,534	8,035
Estimated market value of all machinery and equipment $1,000	739,015	54,544	4,482	82,151	11,886	7,875	75,897
Average per farm ..... dollars	81,470	135,682	74,708	98,033	67,919	51,812	130,183
Farms by size:							
1 to 9 acres	2,237	83	33	223	42	29	128
10 to 49 acres	4,221	199	20	359	100	66	232
50 to 179 acres	1,790	81	5	162	27	34	140
180 to 499 acres	541	33	2	52	4	1	52
500 to 999 acres	182	7	-	23	2	1	21
1,000 acres or more	100	2	-	19	-	1	10
Total cropland ..... farms	7,107	319	40	636	149	135	532
..... acres	456,751	18,905	494	52,286	4,723	4,250	49,699
Harvested cropland ..... farms	6,575	281	40	576	140	119	504
..... acres	408,993	16,555	422	48,795	3,986	3,493	43,892
Irrigated land ..... farms	1,769	171	27	202	60	56	212
..... acres	88,376	11,281	94	13,123	2,520	2,242	19,320
Market value of agricultural products sold (see text) $1,000	1,006,936	125,440	5,196	100,887	16,017	8,027	170,362
Average per farm ..... dollars	111,006	312,040	86,602	120,390	91,528	52,810	292,216
Crops, including nursery and greenhouse crops $1,000	890,767	123,140	5,003	96,197	15,884	7,501	165,553
Livestock, poultry, and their products $1,000	116,169	2,300	193	4,689	133	526	4,809
Farms by value of sales:							
Less than $2,500	3,808	136	16	319	81	51	169
$2,500 to $4,999	1,030	30	4	52	17	19	55
$5,000 to $9,999	958	28	4	87	20	21	62
$10,000 to $24,999	1,032	48	11	95	22	26	87
$25,000 to $49,999	600	35	5	83	5	12	44
$50,000 to $99,999	524	23	8	81	9	7	37
$100,000 or more	1,119	102	12	121	21	16	129
Government payments ..... farms	1,036	33	1	112	10	3	87
..... $1,000	7,596	247	(D)	1,939	20	(D)	520
Total income from farm-related sources, gross before taxes and expenses (see text) ..... farms	3,531	144	16	313	58	70	219
..... $1,000	76,000	4,053	490	9,382	(D)	1,001	2,260
Total farm production expenses $1,000	913,289	101,604	4,372	95,122	14,122	7,259	145,346
Average per farm ..... dollars	100,682	252,747	72,871	113,511	80,695	47,755	249,308
Net cash farm income of operation (see text) ..... farms	9,071	402	60	838	175	152	583
..... $1,000	177,242	28,136	1,315	17,085	5,939	1,774	27,798
Average per farm ..... dollars	19,539	69,991	21,917	20,388	33,939	11,672	47,678
Principal operator by primary occupation:							
Farming ..... number	4,493	247	29	473	88	73	322
Other ..... number	4,578	155	31	365	87	79	261
Principal operator by days worked off farm:							
Any ..... number	5,702	228	34	550	109	102	328
200 days or more ..... number	3,369	134	17	311	74	53	221
Livestock and poultry:							
Cattle and calves inventory ..... farms	1,224	9	-	63	15	9	41
..... number	31,449	108	-	1,384	86	40	830
Beef cows ..... farms	871	8	-	40	7	8	27
..... number	9,500	(D)	-	(D)	19	(D)	(D)
Milk cows ..... farms	127	1	-	5	-	-	3
..... number	7,192	(D)	-	(D)	-	-	(D)
Cattle and calves sold ..... farms	960	7	1	49	15	5	25
..... number	11,691	(D)	(D)	701	43	17	307
Hogs and pigs inventory ..... farms	298	11	2	21	4	9	16
..... number	7,901	485	(D)	(D)	8	(D)	107
Hogs and pigs sold ..... farms	256	8	-	15	3	6	10
..... number	12,548	454	-	(D)	(D)	(D)	62
Sheep and lambs inventory ..... farms	819	15	3	51	9	5	15
..... number	14,924	250	(D)	825	78	37	61
Layers inventory (see text) ..... farms	1,366	36	12	91	25	19	59
..... number	1,543,699	1,751	2,877	3,533	2,912	582	88,693
Broilers and other meat-type chickens sold ..... farms	131	8	1	7	6	-	3
..... number	38,765	842	(D)	130	415	-	65
Selected crops harvested:							
Corn for grain ..... farms	915	25	-	82	6	16	93
..... acres	85,006	520	-	7,557	84	182	6,985
..... bushels	9,904,677	55,104	-	890,775	4,112	6,545	880,377
Corn for silage or greenchop ..... farms	197	1	-	14	1	1	5
..... acres	8,571	(D)	-	414	(D)	(D)	(D)
..... tons	132,042	(D)	-	8,618	(D)	(D)	(D)
Wheat for grain, all ..... farms	360	5	-	33	1	1	62
..... acres	26,545	272	-	2,664	(D)	(D)	6,867
..... bushels	1,403,864	15,513	-	151,202	(D)	(D)	325,755
Winter wheat for grain ..... farms	360	5	-	33	1	1	62
..... acres	26,545	272	-	2,664	(D)	(D)	6,867
..... bushels	1,403,864	15,513	-	151,202	(D)	(D)	325,755
Spring wheat for grain ..... farms	-	-	-	-	-	-	-
..... acres	-	-	-	-	-	-	-
..... bushels	-	-	-	-	-	-	-

--continued

Table 1. County Summary Highlights: 2012 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Item	Essex	Gloucester	Hudson	Hunterdon	Mercer	Middlesex	Monmouth
Farms ..... number	13	584	-	1,447	272	198	823
Land in farms ..... acres	128	43,285	-	96,025	19,744	17,261	38,981
Average size of farm ..... acres	10	74	-	66	73	87	47
Median size of farm ..... acres	6	17	-	20	23	17	12
Estimated market value of land and buildings:							
Average per farm ..... dollars	624,943	882,231	-	1,088,382	1,474,301	1,716,204	1,021,640
Average per acre ..... dollars	63,471	11,909	-	16,401	20,310	19,686	21,581
Estimated market value of all machinery and equipment $1,000	803	54,685	-	85,733	16,101	20,701	80,471
Average per farm ..... dollars	61,788	93,639	-	59,249	59,195	104,551	73,476
Farms by size:							
1 to 9 acres	9	172	-	313	62	63	298
10 to 49 acres	4	262	-	727	131	82	380
50 to 179 acres	-	93	-	319	54	30	105
180 to 499 acres	-	42	-	61	17	13	20
500 to 999 acres	-	11	-	16	6	7	17
1,000 acres or more	-	4	-	11	2	3	3
Total cropland ..... farms	10	448	-	1,111	224	166	564
acres	28	31,997	-	58,261	12,395	12,334	25,132
Harvested cropland ..... farms	10	430	-	1,008	212	158	517
acres	28	30,247	-	50,186	11,155	11,182	22,136
Irrigated land ..... farms	10	137	-	96	61	68	191
acres	18	9,009	-	1,183	1,073	2,854	3,745
Market value of agricultural products sold (see text) $1,000	1,930	87,690	-	67,206	19,729	29,251	84,411
Average per farm ..... dollars	148,435	150,154	-	46,445	72,534	147,733	102,565
Crops, including nursery and greenhouse crops $1,000	(D)	82,308	-	57,319	16,394	28,851	67,185
Livestock, poultry, and their products $1,000	(D)	5,382	-	9,888	3,335	400	17,226
Farms by value of sales:							
Less than $2,500	2	259	-	704	97	69	331
$2,500 to $4,999	2	60	-	191	40	22	82
$5,000 to $9,999	-	69	-	171	18	16	92
$10,000 to $24,999	3	51	-	157	46	24	94
$25,000 to $49,999	-	35	-	82	17	15	60
$50,000 to $99,999	1	19	-	68	24	12	59
$100,000 or more	5	91	-	74	30	40	105
Government payments ..... farms	-	76	-	156	39	30	51
$1,000	-	700	-	724	310	130	169
Total income from farm-related sources, gross before taxes and expenses (see text) ..... farms	2	198	-	589	102	73	329
$1,000	(D)	2,773	-	8,862	2,046	2,257	15,794
Total farm production expenses $1,000	1,243	65,416	-	78,341	18,382	27,893	91,271
Average per farm ..... dollars	95,619	112,014	-	54,140	67,581	139,865	110,901
Net cash farm income of operation (see text) ..... farms	13	584	-	1,447	272	198	823
$1,000	(D)	25,748	-	-1,548	3,703	3,945	9,103
Average per farm ..... dollars	(D)	44,088	-	-1,070	13,614	19,922	11,061
Principal operator by primary occupation:							
Farming ..... number	7	263	-	633	125	87	471
Other ..... number	6	321	-	814	147	111	352
Principal operator by days worked off farm:							
Any ..... number	7	367	-	975	170	121	488
200 days or more ..... number	6	240	-	537	101	78	294
Livestock and poultry:							
Cattle and calves inventory ..... farms	1	68	-	234	19	12	59
number	(D)	2,423	-	4,353	570	152	786
Beef cows ..... farms	1	54	-	175	17	4	37
number	(D)	506	-	1,681	(D)	(D)	550
Milk cows ..... farms	-	4	-	17	4	1	-
number	-	890	-	522	(D)	(D)	-
Cattle and calves sold ..... farms	-	49	-	198	17	10	31
number	-	980	-	1,530	131	84	153
Hogs and pigs inventory ..... farms	1	25	-	47	4	7	10
number	(D)	1,454	-	441	(D)	306	35
Hogs and pigs sold ..... farms	-	20	-	37	3	7	8
number	-	1,888	-	840	(D)	820	34
Sheep and lambs inventory ..... farms	1	39	-	209	29	13	87
number	(D)	603	-	3,080	676	289	1,600
Layers inventory (see text) ..... farms	1	48	-	269	52	28	123
number	(D)	2,005	-	8,194	1,793	1,345	(D)
Broilers and other meat-type chickens sold ..... farms	-	2	-	11	2	5	11
number	-	(D)	-	747	(D)	345	340
Selected crops harvested:							
Corn for grain ..... farms	-	83	-	124	29	22	29
acres	-	3,803	-	6,946	2,712	2,979	2,263
bushels	-	312,380	-	924,750	330,318	345,971	243,441
Corn for silage or greenchop ..... farms	-	8	-	32	2	1	4
acres	-	1,322	-	759	(D)	(D)	167
tons	-	17,003	-	10,722	(D)	(D)	2,375
Wheat for grain, all ..... farms	-	38	-	45	8	3	22
acres	-	3,883	-	1,651	324	(D)	1,145
bushels	-	190,367	-	90,813	17,926	(D)	54,470
Winter wheat for grain ..... farms	-	38	-	45	8	3	22
acres	-	3,883	-	1,651	324	(D)	1,145
bushels	-	190,367	-	90,813	17,926	(D)	54,470
Spring wheat for grain ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
bushels	-	-	-	-	-	-	-

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Table 1. County Summary Highlights: 2012 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Item	Morris	Ocean	Passaic	Salem	Somerset	Sussex	Union	Warren
Farms ..... number	366	178	78	825	400	885	8	784
Land in farms ..... acres	14,458	7,969	1,454	101,847	34,735	61,033	96	72,250
Average size of farm ..... acres	40	45	19	123	87	69	12	92
Median size of farm ..... acres	13	13	10	32	23	23	10	24
Estimated market value of land and buildings:								
Average per farm ..... dollars	914,418	691,533	581,663	974,698	1,779,906	735,953	1,513,045	942,751
Average per acre ..... dollars	23,148	15,446	31,203	7,895	20,497	10,672	126,087	10,230
Estimated market value of all machinery and equipment $1,000	27,487	9,834	4,554	88,789	26,991	42,912	683	60,434
Average per farm ..... dollars	75,102	55,247	58,386	107,622	72,478	48,488	85,313	77,085
Farms by size:								
1 to 9 acres	115	70	35	134	83	191	4	150
10 to 49 acres	174	76	37	364	201	424	4	362
50 to 179 acres	63	24	6	196	67	197	-	187
180 to 499 acres	11	5	-	77	35	56	-	60
500 to 999 acres	3	2	-	36	7	10	-	13
1,000 acres or more	-	1	-	18	7	7	-	12
Total cropland ..... farms	292	113	46	704	318	699	7	594
acres	7,215	2,921	248	81,213	20,241	27,908	55	46,446
Harvested cropland ..... farms	267	105	40	651	302	652	6	557
acres	6,077	2,467	(D)	75,690	17,580	22,491	(D)	42,342
Irrigated land ..... farms	99	45	18	129	53	59	4	71
acres	726	658	91	18,087	526	268	32	1,726
Market value of agricultural products sold (see text) $1,000	28,387	11,550	3,436	111,993	23,206	18,654	2,359	91,205
Average per farm ..... dollars	77,560	64,885	44,045	135,749	58,016	21,078	294,875	116,333
Crops, including nursery and greenhouse crops $1,000	27,206	9,732	3,180	94,077	20,711	11,590	(D)	54,662
Livestock, poultry, and their products $1,000	1,181	1,818	256	17,916	2,495	7,064	(D)	36,543
Farms by value of sales:								
Less than $2,500	164	75	43	320	183	443	1	345
$2,500 to $4,999	54	18	7	93	40	138	1	105
$5,000 to $9,999	25	12	7	103	41	97	1	84
$10,000 to $24,999	53	24	8	61	44	88	1	89
$25,000 to $49,999	23	8	4	66	24	56	-	26
$50,000 to $99,999	16	21	4	37	34	17	1	46
$100,000 or more	31	20	5	145	34	46	3	89
Government payments ..... farms	8	10	1	163	28	72	-	136
$1,000	61	112	(D)	1,386	128	370	-	773
Total income from farm-related sources, gross before taxes and expenses (see text) ..... farms	166	73	39	299	156	355	3	327
$1,000	4,495	2,078	884	3,752	3,084	5,311	(D)	2,757
Total farm production expenses $1,000	28,576	12,228	4,604	88,069	28,386	25,433	1,982	73,841
Average per farm ..... dollars	78,077	68,684	59,020	106,750	70,966	28,738	247,793	94,185
Net cash farm income of operation (see text) ..... farms	366	178	78	825	400	885	8	784
$1,000	4,367	1,514	-284	29,061	-1,967	-1,098	(D)	20,894
Average per farm ..... dollars	11,932	8,505	-3,637	35,228	-4,919	-1,241	(D)	26,650
Principal operator by primary occupation:								
Farming ..... number	159	91	38	440	133	424	3	387
Other ..... number	207	87	40	385	267	461	5	397
Principal operator by days worked off farm:								
Any ..... number	243	126	58	521	252	563	7	473
200 days or more ..... number	144	50	34	311	154	316	5	290
Livestock and poultry:								
Cattle and calves inventory ..... farms	36	14	2	187	67	207	-	181
number	289	548	(D)	7,372	2,942	4,780	-	4,799
Beef cows ..... farms	31	13	1	133	46	141	-	128
number	(D)	(D)	(D)	1,934	664	1,359	-	1,402
Milk cows ..... farms	2	3	-	20	5	32	-	30
number	(D)	(D)	-	1,919	66	1,447	-	1,395
Cattle and calves sold ..... farms	29	10	3	152	61	161	-	137
number	132	167	9	2,191	2,101	1,564	-	1,550
Hogs and pigs inventory ..... farms	17	8	3	21	7	46	-	39
number	231	288	8	132	140	474	-	402
Hogs and pigs sold ..... farms	12	8	2	23	10	46	-	38
number	197	204	(D)	208	143	754	-	714
Sheep and lambs inventory ..... farms	46	11	7	41	48	89	-	101
number	1,314	258	57	875	926	1,407	-	2,569
Layers inventory (see text) ..... farms	72	30	31	77	67	190	-	136
number	3,020	821	1,250	(D)	7,758	7,661	-	(D)
Broilers and other meat-type chickens sold ..... farms	4	2	2	15	5	34	-	13
number	135	(D)	(D)	366	3,422	(D)	-	565
Selected crops harvested:								
Corn for grain ..... farms	12	8	-	176	29	44	-	137
acres	406	133	-	22,954	2,657	3,250	-	19,575
bushels	40,745	13,218	-	3,004,760	237,916	313,031	-	2,301,214
Corn for silage or greenchop ..... farms	-	3	-	39	2	48	-	36
acres	-	190	-	2,214	(D)	1,839	-	1,308
tons	-	2,875	-	36,513	(D)	25,911	-	21,715
Wheat for grain, all ..... farms	2	2	-	93	18	2	-	25
acres	(D)	(D)	-	7,270	1,169	(D)	-	867
bushels	(D)	(D)	-	428,472	56,386	(D)	-	52,845
Winter wheat for grain ..... farms	2	2	-	93	18	2	-	25
acres	(D)	(D)	-	7,270	1,169	(D)	-	867
bushels	(D)	(D)	-	428,472	56,386	(D)	-	52,845
Spring wheat for grain ..... farms	-	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-	-
bushels	-	-	-	-	-	-	-	-

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Table 1. County Summary Highlights: 2012 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Item	New Jersey	Atlantic	Bergen	Burlington	Camden	Cape May	Cumberland
Selected crops harvested: - Con.							
Oats for grain ..... farms	52	-	-	-	-	-	2
acres	1,003	-	-	-	-	-	(D)
bushels	61,522	-	-	-	-	-	(D)
Barley for grain ..... farms	40	1	-	-	-	-	2
acres	1,746	(D)	-	-	-	-	(D)
bushels	109,706	(D)	-	-	-	-	(D)
Sorghum for grain ..... farms	23	-	-	-	-	-	10
acres	1,082	-	-	-	-	-	703
bushels	39,391	-	-	-	-	-	16,646
Sorghum for silage or greenchop ..... farms	13	1	-	-	-	1	-
acres	117	(D)	-	-	-	(D)	-
tons	542	(D)	-	-	-	(D)	-
Soybeans for beans ..... farms	777	3	-	109	7	2	106
acres	93,833	(D)	-	19,288	199	(D)	10,674
bushels	3,746,674	(D)	-	722,462	4,820	(D)	415,219
Dry edible beans, excluding limas ..... farms	2	-	-	-	-	-	-
acres	(D)	-	-	-	-	-	-
cwt	(D)	-	-	-	-	-	-
Cotton, all ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
pounds	-	-	-	-	-	-	-
Forage - land used for all hay and all haylage, grass silage, and greenchop (see text) ..... farms	3,025	54	4	177	54	45	165
acres	102,624	772	209	4,663	651	792	4,106
tons, dry	207,403	1,222	191	10,541	823	1,130	7,472
Rice ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
cwt	-	-	-	-	-	-	-
Sunflower seed, all ..... farms	7	-	-	-	-	-	-
acres	181	-	-	-	-	-	-
pounds	94,880	-	-	-	-	-	-
Sugarbeets for sugar ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
pounds	-	-	-	-	-	-	-
Vegetables harvested for sale (see text) ..... farms	1,127	83	10	113	26	37	97
acres	50,396	6,150	71	5,071	1,957	274	9,545
Potatoes ..... farms	191	14	1	23	2	8	11
acres	2,427	22	(D)	603	(D)	4	264
Sweet potatoes ..... farms	55	11	-	4	5	4	5
acres	1,203	524	-	28	485	3	19
Land in orchards ..... farms	569	33	5	37	18	20	24
acres	8,791	265	(D)	331	218	101	1,869

Item	Essex	Gloucester	Hudson	Hunterdon	Mercer	Middlesex	Monmouth
Selected crops harvested. - Con.							
Oats for grain ..... farms	-	-	-	19	1	-	1
acres	-	-	-	464	(D)	-	(D)
bushels	-	-	-	26,776	(D)	-	(D)
Barley for grain ..... farms	-	1	-	9	1	-	3
acres	-	(D)	-	132	(D)	-	18
bushels	-	(D)	-	4,152	(D)	-	300
Sorghum for grain ..... farms	-	3	-	4	-	-	1
acres	-	(D)	-	20	-	-	(D)
bushels	-	(D)	-	300	-	-	(D)
Sorghum for silage or greenchop ..... farms	-	1	-	6	-	-	-
acres	-	(D)	-	22	-	-	-
tons	-	(D)	-	64	-	-	-
Soybeans for beans ..... farms	-	84	-	50	29	32	45
acres	-	8,677	-	5,405	4,324	4,573	5,674
bushels	-	333,018	-	235,825	185,199	197,706	219,031
Dry edible beans, excluding limas ..... farms	-	-	-	1	-	-	1
acres	-	-	-	(D)	-	-	(D)
cwt	-	-	-	(D)	-	-	(D)
Cotton, all ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
pounds	-	-	-	-	-	-	-
Forage - land used for all hay and all haylage, grass silage, and greenchop (see text) ..... farms	-	162	-	652	58	29	176
acres	-	3,664	-	29,690	1,508	933	4,828
tons, dry	-	9,445	-	58,012	2,902	1,773	10,044
Rice ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
cwt	-	-	-	-	-	-	-
Sunflower seed, all ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
pounds	-	-	-	-	-	-	-
Sugarbeets for sugar ..... farms	-	-	-	-	-	-	-
acres	-	-	-	-	-	-	-
pounds	-	-	-	-	-	-	-
Vegetables harvested for sale (see text) ..... farms	3	92	-	100	35	51	103
acres	(D)	7,070	-	792	561	1,356	1,714
Potatoes ..... farms	-	8	-	23	5	10	9
acres	-	29	-	27	2	21	5
Sweet potatoes ..... farms	-	11	-	1	1	-	2
acres	-	74	-	(D)	(D)	(D)	(D)
Land in orchards ..... farms	2	43	-	82	17	28	43
acres	(D)	2,617	-	564	510	123	496

—continued

Table 1. County Summary Highlights: 2012 (continued)

[For meaning of abbreviations and symbols, see introductory text.]

Item		Morris	Ocean	Passaic	Salem	Somerset	Sussex	Union	Warren
Selected crops harvested: - Con.									
Oats for grain	farms	1	-	-	2	11	3	-	12
	acres	(D)	-	-	(D)	255	82	-	130
	bushels	(D)	-	-	(D)	19,398	4,760	-	7,892
Barley for grain	farms	-	-	-	20	-	1	-	2
	acres	-	-	-	950	-	(D)	-	(D)
	bushels	-	-	-	60,236	-	(D)	-	(D)
Sorghum for grain	farms	-	-	-	4	1	-	-	-
	acres	-	-	-	(D)	(D)	-	-	-
	bushels	-	-	-	7,300	(D)	-	-	-
Sorghum for silage or greenchop	farms	-	1	-	3	-	-	-	-
	acres	-	(D)	-	42	-	-	-	-
	tons	-	(D)	-	303	-	-	-	-
Soybeans for beans	farms	1	1	-	234	12	2	-	60
	acres	(D)	(D)	-	25,681	2,354	(D)	-	5,661
	bushels	(D)	(D)	-	1,045,021	87,369	(D)	-	250,070
Dry edible beans, excluding limas	farms	-	-	-	-	-	-	-	-
	acres	-	-	-	-	-	-	-	-
	cwt	-	-	-	-	-	-	-	-
Cotton, all	farms	-	-	-	-	-	-	-	-
	acres	-	-	-	-	-	-	-	-
	pounds	-	-	-	-	-	-	-	-
Forage - land used for all hay and all haylage, grass silage, and greenchop (see text)	farms	115	28	3	341	181	434	-	347
	acres	3,596	405	32	10,790	9,758	15,189	-	11,038
	tons, dry	6,043	772	93	27,475	19,514	28,867	-	21,084
Rice	farms	-	-	-	-	-	-	-	-
	acres	-	-	-	-	-	-	-	-
	cwt	-	-	-	-	-	-	-	-
Sunflower seed, all	farms	-	-	-	-	5	1	-	1
	acres	-	-	-	-	(D)	(D)	-	(D)
	pounds	-	-	-	-	(D)	(D)	-	(D)
Sugarbeets for sugar	farms	-	-	-	-	-	-	-	-
	acres	-	-	-	-	-	-	-	-
	pounds	-	-	-	-	-	-	-	-
Vegetables harvested for sale (see text)	farms	61	25	21	93	34	80	5	58
	acres	913	708	101	11,541	233	590	(D)	1,720
Potatoes	farms	13	5	4	11	5	21	-	18
	acres	24	16	1	1,358	4	13	-	34
Sweet potatoes	farms	1	1	-	6	-	-	-	2
	acres	(D)	(D)	-	58	-	-	-	(D)
Land in orchards	farms	44	11	5	19	25	59	-	54
	acres	202	48	10	(D)	91	270	-	399

value, a measurement of the average value of all land and buildings on farms, averaged $12,200 per acre 2012, down 3.9 percent from 2011. The Garden State ranked first among all states in farm real estate value per acre. Rhode Island's real estate value per acre was the second highest value per acre in the country, at $12,000. Connecticut ranked third, at $11,100 per acre, and Massachusetts's real estate value per acre ranked fourth, at $10,500 per acre. Delaware's real estate value per acre ranked fifth, at $8,100 per acre followed by Maryland's ranking of sixth, at $7,200 per acre. The highest farm real estate values were in the Corn Belt region, at $4,960, while the Northeast region ranked second at $4,780 per acre.

value per acre for New Jersey averaged $12,300 per acre on January 1, 2012, down 3.9 percent from January 1, 2011. New Jersey ranked first among the states that publish cropland value per acre, with California in second place, at $9,810 per acre. Arizona ranked third nationally for cropland at $8,500 per acre, followed by Delaware at $7,800 per acre.

Pasture value per acre for New Jersey ranked first in the nation among the states that publish this value, averaging $13,500, 2.9 percent lower than the previous year. North Carolina, at $4,400 per acre, ranked second nationally in pasture value. Florida's pasture value ranked third at $4,300 per acre.

Cash Rent for New Jersey cropland averaged $68.00 per acre during the 2012 crop year, up 9.8 percent from last year.

[illegible] 2008 - 2012

State	2008	2009	2010	2011	2012	Change 2011-2012
	Dollars					Percent
Northeast	4,980	4,830	4,690	4,690	4,780	1.9
Connecticut	12,700	12,000	11,500	11,500	11,100	
Delaware	10,300	8,900	8,100	8,100	8,100	---
Maine	2,200	2,100	2,000	2,000	1,970	
Maryland	8,000	7,500	7,200	7,200	7,200	---
Massachusetts	12,700	12,000	11,300	11,000	10,500	
New Hampshire	4,900	4,800	4,750	4,650	4,550	
New Jersey	15,300	13,800	13,100	12,700	12,200	
New York	2,350	2,400	2,400	2,450	2,650	8.2
Pennsylvania	5,150	5,100	5,000	5,000	5,200	4.0
Rhode Island	16,800	15,300	13,600	13,000	12,000	
Vermont	2,900	2,600	2,750	2,750	2,750	---

[illegible] the value of both land and buildings on farms

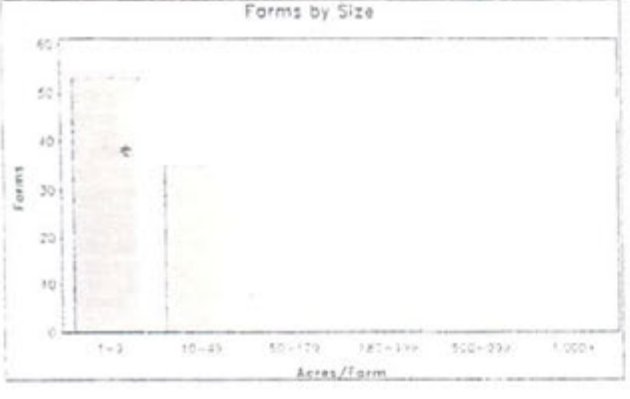
Source: USDA-NASS: Farm Values and Cash Rents, August 2012

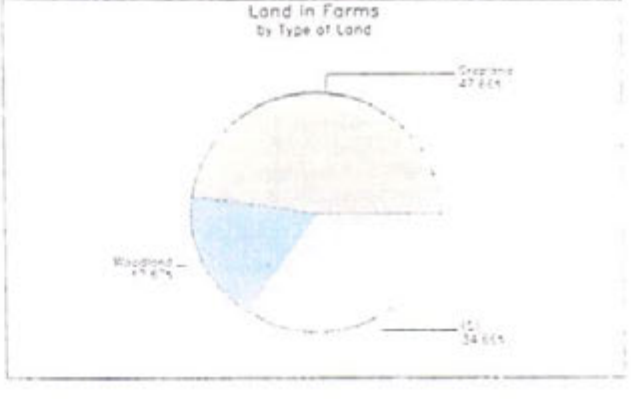
(4)

2007 Census of
AGRICULTURE
County Profile

Bergen County
New Jersey

	2007	2002	+ % change
Number of Farms	89	91	- 2
Land in Farms	1,177 acres	1,283 acres	- 8
Average Size of Farm	13 acres	14 acres	- 7
Market Value of Products Sold	$8,694,000	$7,564,000	+ 15
Crop Sales $8,385,000 (96 percent) Livestock Sales $309,000 (4 percent)			
Average Per Farm	$97,685	$83,123	+ 18
Government Payments	(D)	(D)	
Average Per Farm Receiving Payments	(D)	(D)	





$39,358 ÷ 13 Acres = $3,027/Acre

Bergen County – New Jersey

Ranked items among the 21 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe [1]	U.S. Rank	Universe [1]
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)					
Total value of agricultural products sold	8,694	17	20	2,653	3,076
Value of crops including nursery and greenhouse	8,385	17	20	1,983	3,072
Value of livestock, poultry, and their products	309	16	20	3,006	3,069
VALUE OF SALES BY COMMODITY GROUP ($1,000)					
Grains, oilseeds, dry beans, and dry peas	-	-	17	-	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	-	-	-	-	626
Vegetables, melons, potatoes, and sweet potatoes	(D)	17	20	1,004	2,796
Fruits, tree nuts, and berries	129	17	20	1,281	2,859
Nursery, greenhouse, floriculture, and sod	7,560	14	20	355	2,703
Cut Christmas trees and short rotation woody crops	(D)	16	18	(D)	1,710
Other crops and hay	(D)	17	18	3,045	3,054
Poultry and eggs	262	10	20	1,211	3,020
Cattle and calves	3	19	19	3,046	3,054
Milk and other dairy products from cows	-	-	13	-	2,493
Hogs and pigs	(D)	18	18	(D)	2,922
Sheep, goats, and their products	(D)	18	18	(D)	2,998
Horses, ponies, mules, burros, and donkeys	34	17	20	2,414	3,024
Aquaculture	(D)	12	16	(D)	1,498
Other animals and other animal products	3	18	18	2,368	2,875
TOP CROP ITEMS (acres)					
Vegetables harvested for sale	138	16	20	1,197	2,794
Floriculture crops	52	13	20	153	1,815
Forage - land used for all hay and haylage, grass silage, and greenchop	(D)	17	18	3,048	3,060
Tomatoes in the open	28	16	20	310	2,368
Nursery stock	28	17	20	1,083	2,130
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	3,885	8	20	849	3,024
Pullets for laying flock replacement	422	6	18	753	2,627
Horses and ponies	336	18	20	2,613	3,066
Broilers and other meat-type chickens	(D)	11	17	(D)	2,476
Pigeons or squab	(D)	6	14	(D)	1,501

Other County Highlights

Economic Characteristics	Quantity
Farms by value of sales:	
Less than $1,000	18
$1,000 to $2,499	8
$2,500 to $4,999	6
$5,000 to $9,999	11
$10,000 to $19,999	15
$20,000 to $24,999	4
$25,000 to $39,999	3
$40,000 to $49,999	1
$50,000 to $99,999	2
$100,000 to $249,999	10
$250,000 to $499,999	5
$500,000 or more	6
Total farm production expenses ($1,000)	7,420
Average per farm ($)	83,369
Net cash farm income of operation ($1,000)	3,503
Average per farm ($)	39,358

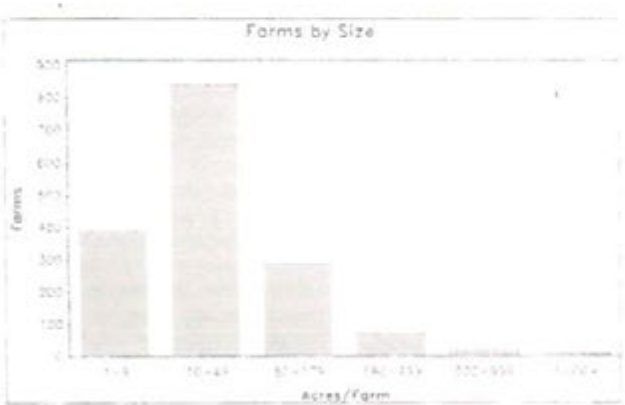
Operator Characteristics	Quantity
Principal operators by primary occupation:	
Farming	51
Other	38
Principal operators by sex:	
Male	77
Female	12
Average age of principal operator (years)	59.2
All operators by race [2]:	
American Indian or Alaska Native	-
Asian	1
Black or African American	-
Native Hawaiian or Other Pacific Islander	-
White	150
More than one race	-
All operators of Spanish, Hispanic, or Latino Origin [2]	2

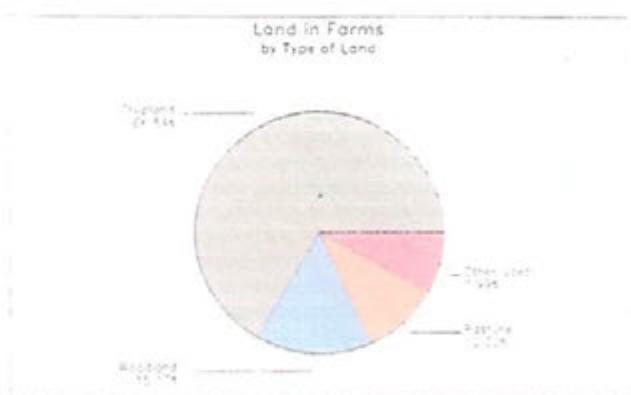
See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.
(D) Cannot be disclosed. (Z) Less than half of the unit shown.
[1] Universe is number of counties in state or U.S. with item. [2] Data were collected for a maximum of three operators per farm.

2007 CENSUS OF AGRICULTURE
County Profile

Hunterdon County
New Jersey

	2007	2002	% change
Number of Farms	1,623	1,514	+ 7
Land in Farms	100,027 acres	109,241 acres	- 8
Average Size of Farm	62 acres	72 acres	- 14
Market Value of Products Sold	$69,745,000	$42,267,000	+ 65
Crop Sales $60,675,000 (87 percent) Livestock Sales $9,070,000 (13 percent)			
Average Per Farm	$42,973	$27,917	+ 54
Government Payments	$729,000	$427,000	+ 71
Average Per Farm Receiving Payments	$5,359	$4,230	+ 27





$ 2,435 ÷ 62A = $ 39.27/A

2007 CENSUS OF AGRICULTURE
County Profile

Hunterdon County – New Jersey

Ranked items among the 21 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe [1]	U.S. Rank	Universe [1]
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)					
Total value of agricultural products sold	69,745	8	20	1,250	3,078
Value of crops including nursery and greenhouse	60,675	6	20	723	3,072
Value of livestock, poultry, and their products	9,070	6	20	2,106	3,069
VALUE OF SALES BY COMMODITY GROUP ($1,000)					
Grains, oilseeds, dry beans, and dry peas	5,933	4	17	1,424	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	-	-	-	-	626
Vegetables, melons, potatoes, and sweet potatoes	2,649	12	20	497	2,796
Fruits, tree nuts, and berries	2,664	6	20	252	2,659
Nursery, greenhouse, floriculture, and sod	44,347	3	20	75	2,703
Cut Christmas trees and short rotation woody crops	295	5	18	169	1,710
Other crops and hay	4,785	1	18	341	3,054
Poultry and eggs	654	5	20	1,060	3,020
Cattle and calves	1,872	2	19	2,343	3,054
Milk and other dairy products from cows	1,914	5	13	1,100	2,493
Hogs and pigs	209	4	18	1,207	2,922
Sheep, goats, and their products	(D)	1	18	(D)	2,998
Horses, ponies, mules, burros, and donkeys	3,075	3	20	47	3,024
Aquaculture	(D)	11	16	(D)	1,498
Other animals and other animal products	1,056	3	18	189	2,875
TOP CROP ITEMS (acres)					
Forage - land used for all hay and haylage, grass silage, and greenchop	30,513	1	18	670	3,060
Corn for grain	9,188	3	16	1,208	2,634
Soybeans for beans	4,383	7	14	1,220	2,039
Wheat for grain, all	2,236	5	14	1,316	2,481
Nursery stock	1,174	5	20	76	2,130
TOP LIVESTOCK INVENTORY ITEMS (number)					
Pheasants	30,981	2	16	22	1,544
Layers	7,849	5	20	728	3,024
Pigeons or squab	5,492	1	14	13	1,501
Cattle and calves	5,358	4	20	2,423	3,060
Horses and ponies	3,900	2	20	135	3,066

Other County Highlights

Economic Characteristics	Quantity
Farms by value of sales:	
Less than $1,000	535
$1,000 to $2,499	361
$2,500 to $4,999	185
$5,000 to $9,999	163
$10,000 to $19,999	131
$20,000 to $24,999	37
$25,000 to $39,999	50
$40,000 to $49,999	15
$50,000 to $99,999	66
$100,000 to $249,999	43
$250,000 to $499,999	25
$500,000 or more	12
Total farm production expenses ($1,000)	75,140
Average per farm ($)	46,297
Net cash farm income of operation ($1,000)	3,951
Average per farm ($)	2,435

Operator Characteristics	Quantity
Principal operators by primary occupation:	
Farming	639
Other	984
Principal operators by sex:	
Male	1,256
Female	367
Average age of principal operator (years)	57.6
All operators by race [2]:	
American Indian or Alaska Native	4
Asian	26
Black or African American	1
Native Hawaiian or Other Pacific Islander	1
White	2,461
More than one race	23
All operators of Spanish, Hispanic, or Latino Origin [2]	21

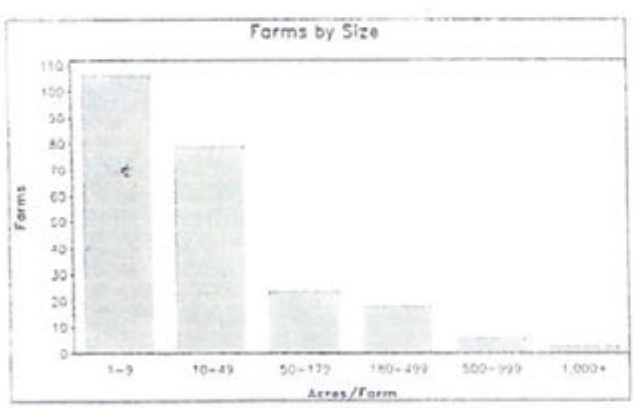
See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.
(D) Cannot be disclosed. (Z) Less than half of the unit shown.
[1] Universe is number of counties in state or U.S. with item. [2] Data were collected for a maximum of three operators per farm.

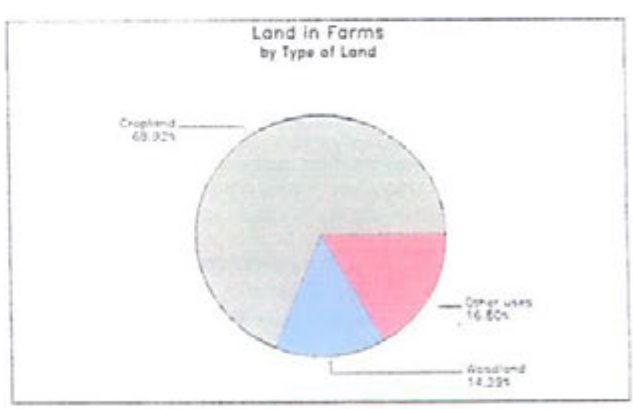
2007 CENSUS OF AGRICULTURE

County Profile

Middlesex County
New Jersey

	2007	2002	% change
Number of Farms	236	275	- 14
Land in Farms	18,717 acres	21,824 acres	- 14
Average Size of Farm	79 acres	79 acres	0
Market Value of Products Sold	$41,854,000	$22,703,000	+ 84
Crop Sales $40,207,000 (96 percent) Livestock Sales $1,647,000 (4 percent)			
Average Per Farm	$177,346	$82,555	+ 115
Government Payments	$109,000	$177,000	- 38
Average Per Farm Receiving Payments	$6,050	$16,062	- 62





46,624 ÷ 79 Acres = # 590 / Acre

2007 CENSUS OF AGRICULTURE

County Profile

Middlesex County – New Jersey

Ranked items among the 21 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe [1]	U.S. Rank	Universe [1]
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)					
Total value of agricultural products sold	41,854	9	20	1,725	3,076
Value of crops including nursery and greenhouse	40,207	9	20	1,026	3,072
Value of livestock, poultry, and their products	1,647	14	20	2,818	3,069
VALUE OF SALES BY COMMODITY GROUP ($1,000)					
Grains, oilseeds, dry beans, and dry peas	3,711	6	17	1,595	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	-	-	-	-	626
Vegetables, melons, potatoes, and sweet potatoes	3,226	9	20	441	2,796
Fruits, tree nuts, and berries	379	15	20	805	2,659
Nursery, greenhouse, floriculture, and sod	32,406	5	20	107	2,703
Cut Christmas trees and short rotation woody crops	326	3	18	151	1,710
Other crops and hay	160	13	18	2,737	3,054
Poultry and eggs	21	17	20	2,140	3,020
Cattle and calves	(D)	(D)	19	(D)	3,054
Milk and other dairy products from cows	-	-	13	-	2,493
Hogs and pigs	(D)	1	18	(D)	2,922
Sheep, goats, and their products	169	4	18	728	2,998
Horses, ponies, mules, burros, and donkeys	(D)	13	20	(D)	3,024
Aquaculture	(D)	13	16	(D)	1,498
Other animals and other animal products	(D)	13	18	(D)	2,875
TOP CROP ITEMS (acres)					
Corn for grain	4,313	6	16	1,451	2,634
Soybeans for beans	2,983	9	14	1,312	2,039
Vegetables harvested for sale	1,401	9	20	427	2,794
Forage - land used for all hay and haylage, grass silage, and greenchop	998	12	18	2,878	3,060
Nursery stock	780	7	20	121	2,130
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	815	16	20	1,801	3,024
Horses and ponies	721	13	20	1,804	3,066
Sheep and lambs	434	11	19	1,536	2,891
Hogs and pigs	377	7	19	1,515	2,958
Colonies of bees	(D)	(D)	18	(D)	2,640

Other County Highlights

Economic Characteristics	Quantity
Farms by value of sales:	
Less than $1,000	59
$1,000 to $2,499	38
$2,500 to $4,999	19
$5,000 to $9,999	21
$10,000 to $19,999	20
$20,000 to $24,999	7
$25,000 to $39,999	13
$40,000 to $49,999	4
$50,000 to $99,999	9
$100,000 to $249,999	24
$250,000 to $499,999	9
$500,000 or more	13
Total farm production expenses ($1,000)	32,931
Average per farm ($)	139,538
Net cash farm income of operation ($1,000)	11,003
Average per farm ($)	46,624

Operator Characteristics	Quantity
Principal operators by primary occupation:	
Farming	105
Other	130
Principal operators by sex:	
Male	198
Female	38
Average age of principal operator (years)	57.1
All operators by race [2]:	
American Indian or Alaska Native	-
Asian	13
Black or African American	2
Native Hawaiian or Other Pacific Islander	-
White	367
More than one race	-
All operators of Spanish, Hispanic, or Latino Origin [2]	11

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(D) Cannot be disclosed. (Z) Less than half of the unit shown.
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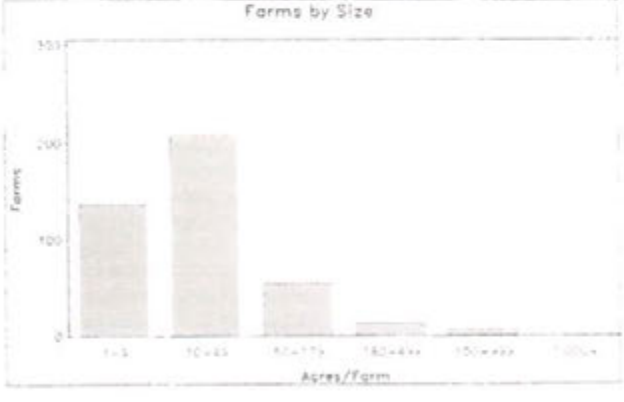
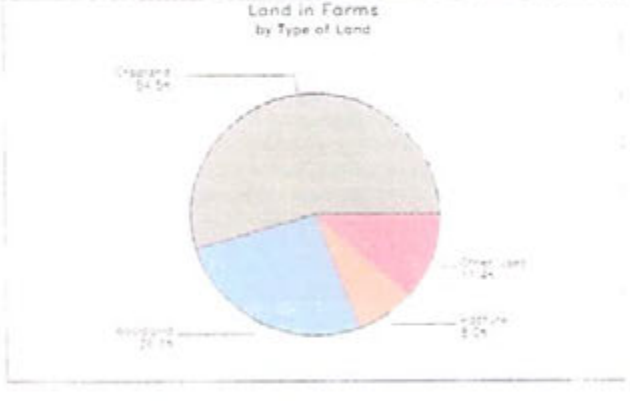
2007 CENSUS OF AGRICULTURE

County Profile

Morris County
New Jersey

	2007	2002	% change
Number of Farms	422	407	+ 4
Land in Farms	17,028 acres	17,233 acres	- 1
Average Size of Farm	40 acres	42 acres	- 5
Market Value of Products Sold	$27,312,000	$41,879,000	- 35
Crop Sales $23,126,000 (85 percent) Livestock Sales $4,185,000 (15 percent)			
Average Per Farm	$64,720	$102,897	- 37
Government Payments	$91,000	$53,000	+ 72
Average Per Farm Receiving Payments	$6,053	$5,904	+ 3





$21,488 ÷ 40A = $537/A

2007 CENSUS OF AGRICULTURE
County Profile

Morris County – New Jersey

Ranked items among the 21 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe [1]	U.S. Rank	Universe [1]
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)					
Total value of agricultural products sold	27,312	10	20	2,050	3,076
Value of crops including nursery and greenhouse	23,126	10	20	1,376	3,072
Value of livestock, poultry, and their products	4,185	9	20	2,518	3,069
VALUE OF SALES BY COMMODITY GROUP ($1,000)					
Grains, oilseeds, dry beans, and dry peas	307	12	17	2,254	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	-	-	-	-	626
Vegetables, melons, potatoes, and sweet potatoes	3,164	10	20	448	2,796
Fruits, tree nuts, and berries	944	13	20	478	2,659
Nursery, greenhouse, floriculture, and sod	17,942	8	20	173	2,703
Cut Christmas trees and short rotation woody crops	88	8	18	443	1,710
Other crops and hay	683	9	18	1,896	3,054
Poultry and eggs	185	12	20	1,278	3,020
Cattle and calves	99	13	19	2,977	3,054
Milk and other dairy products from cows	54	11	13	2,097	2,493
Hogs and pigs	7	17	18	2,406	2,922
Sheep, goats, and their products	249	2	18	519	2,998
Horses, ponies, mules, burros, and donkeys	3,337	2	20	43	3,024
Aquaculture	-	-	16	-	1,498
Other animals and other animal products	256	6	18	583	2,875
TOP CROP ITEMS (acres)					
Forage - land used for all hay and haylage, grass silage, and greenchop	4,294	10	18	2,406	3,060
Vegetables harvested for sale	920	11	20	552	2,794
Corn for grain	565	14	16	2,027	2,634
Nursery stock	378	10	20	267	2,130
Sweet corn	374	8	19	227	2,384
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	1,850	12	20	1,152	3,024
Horses and ponies	1,234	8	20	1,110	3,066
Sheep and lambs	1,184	5	19	785	2,891
Colonies of bees	415	6	18	673	2,640
Cattle and calves	387	12	20	2,981	3,060

Other County Highlights

Economic Characteristics	Quantity
Farms by value of sales:	
Less than $1,000	137
$1,000 to $2,499	62
$2,500 to $4,999	41
$5,000 to $9,999	55
$10,000 to $19,999	34
$20,000 to $24,999	17
$25,000 to $39,999	19
$40,000 to $49,999	11
$50,000 to $99,999	11
$100,000 to $249,999	15
$250,000 to $499,999	10
$500,000 or more	10
Total farm production expenses ($1,000)	24,963
Average per farm ($)	59,155
Net cash farm income of operation ($1,000)	9,068
Average per farm ($)	21,488

Operator Characteristics	Quantity
Principal operators by primary occupation:	
Farming	158
Other	264
Principal operators by sex:	
Male	325
Female	97
Average age of principal operator (years)	57.7
All operators by race [2]:	
American Indian or Alaska Native	-
Asian	3
Black or African American	2
Native Hawaiian or Other Pacific Islander	-
White	641
More than one race	4
All operators of Spanish, Hispanic, or Latino Origin [2]	9

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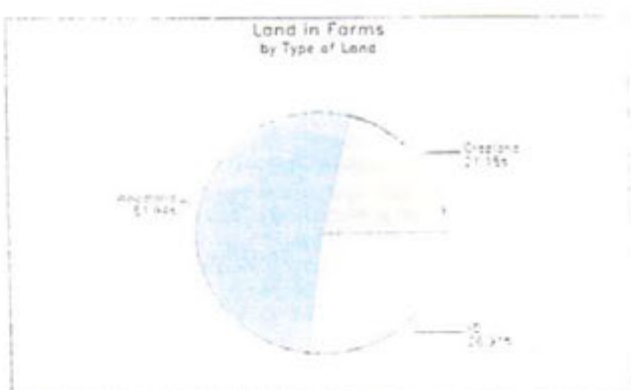
(D) Cannot be disclosed. (Z) Less than half of the unit shown.
[1] Universe is number of counties in state or U.S. with item. [2] Data were collected for a maximum of three operators per farm.

20[illegible]
AGRICULTURE

Passaic County
New Jersey

	2007	2002	% change
Number of Farms	103	70	+ 47
Land in Farms	1,981 acres	1,526 acres	+ 30
Average Size of Farm	19 acres	22 acres	- 14
Market Value of Products Sold	$6,318,000	$6,074,000	+ 4
Crop Sales $6,054,000 (96 percent) Livestock Sales $264,000 (4 percent)			
Average Per Farm	$61,343	$86,768	- 29
Government Payments	(D)	-	
Average Per Farm Receiving Payments	(D)	-	



United States Department of Agriculture
National Agricultural Statistics Service

8,990 ÷ 19 acres = # 473 / acre

Passaic County – New Jersey

Ranked items among the 21 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe [1]	U.S. Rank	Universe [1]
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)					
Total value of agricultural products sold	6,318	18	20	2,751	3,076
Value of crops including nursery and greenhouse	6,054	18	20	2,151	3,072
Value of livestock, poultry, and their products	264	17	20	3,018	3,069
VALUE OF SALES BY COMMODITY GROUP ($1,000)					
Grains, oilseeds, dry beans, and dry peas	-	-	17	-	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	-	-	-	-	626
Vegetables, melons, potatoes, and sweet potatoes	621	16	20	980	2,796
Fruits, tree nuts, and berries	(D)	18	20	(D)	2,659
Nursery, greenhouse, floriculture, and sod	5,340	17	20	454	2,703
Cut Christmas trees and short rotation woody crops	(D)	17	18	(D)	1,710
Other crops and hay	(D)	18	18	3,048	3,054
Poultry and eggs	32	15	20	1,891	3,020
Cattle and calves	4	18	19	3,042	3,054
Milk and other dairy products from cows	-	-	13	-	2,493
Hogs and pigs	7	16	18	2,404	2,922
Sheep, goats, and their products	21	14	18	2,265	2,998
Horses, ponies, mules, burros, and donkeys	187	14	20	1,167	3,024
Aquaculture	(D)	14	15	(D)	1,498
Other animals and other animal products	(D)	14	18	(D)	2,875
TOP CROP ITEMS (acres)					
Vegetables harvested for sale	105	18	20	1,311	2,794
Sweet corn	50	16	19	679	2,384
Cut Christmas trees	(D)	17	18	(D)	1,756
Pumpkins	15	18	19	787	1,716
Tomatoes in the open	14	18	20	535	2,358
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	653	17	20	1,958	3,024
Horses and ponies	441	16	20	2,371	3,066
Ducks	196	13	19	638	2,733
Goats, all	113	15	20	2,532	3,023
Colonies of bees	82	14	18	1,389	2,840

Other County Highlights

Economic Characteristics	Quantity
Farms by value of sales:	
Less than $1,000	42
$1,000 to $2,499	16
$2,500 to $4,999	15
$5,000 to $9,999	9
$10,000 to $19,999	9
$20,000 to $24,999	2
$25,000 to $39,999	1
$40,000 to $49,999	1
$50,000 to $99,999	4
$100,000 to $249,999	-
$250,000 to $499,999	-
$500,000 or more	4
Total farm production expenses ($1,000)	6,006
Average per farm ($)	58,312
Net cash farm income of operation ($1,000)	926
Average per farm ($)	8,990

Operator Characteristics	Quantity
Principal operators by primary occupation:	
Farming	43
Other	60
Principal operators by sex:	
Male	76
Female	27
Average age of principal operator (years)	56.9
All operators by race [2]:	
American Indian or Alaska Native	-
Asian	-
Black or African American	-
Native Hawaiian or Other Pacific Islander	-
White	152
More than one race	2
All operators of Spanish, Hispanic, or Latino Origin [2]	-

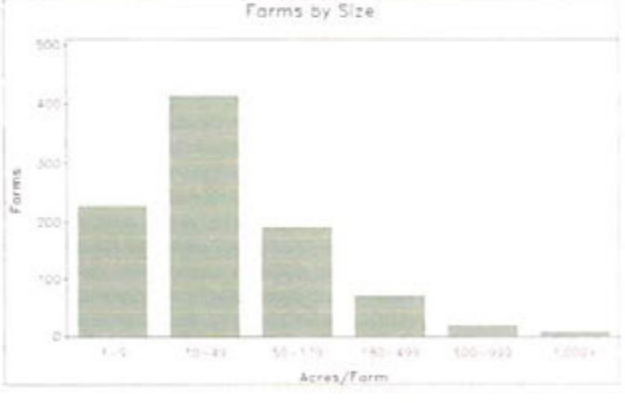
See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.
(D) Cannot be disclosed. (Z) Less than half of the unit shown.
[1] Universe is number of counties in state or U.S. with item. [2] Data were collected for a maximum of three operators per farm.

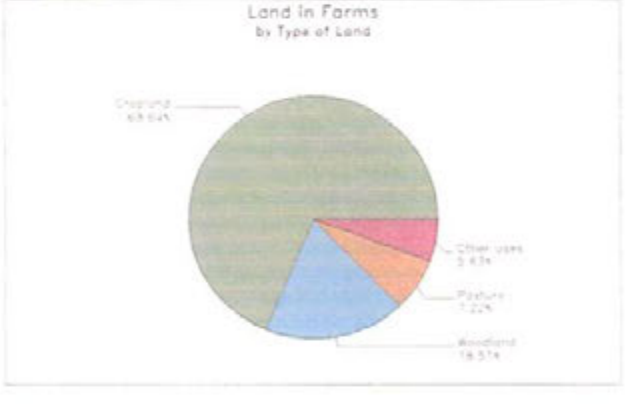
2007 CENSUS OF AGRICULTURE

County Profile

Warren County
New Jersey

	2007	2002	% change
Number of Farms	933	814	+ 15
Land in Farms	74,975 acres	78,042 acres	- 4
Average Size of Farm	80 acres	96 acres	- 17
Market Value of Products Sold	$75,477,000	$39,701,000	+ 90
Crop Sales $43,622,000 (58 percent) Livestock Sales $31,855,000 (42 percent)			
Average Per Farm	$80,897	$48,772	+ 66
Government Payments	$949,000	$623,000	+ 52
Average Per Farm Receiving Payments	$7,651	$7,080	+ 8





$22,340 ÷ 80A = $279/A

2007 CENSUS OF AGRICULTURE

County Profile

Warren County – New Jersey

Ranked items among the 21 state counties and 3,079 U.S. counties, 2007

Item	Quantity	State Rank	Universe [1]	U.S. Rank	Universe [1]
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)					
Total value of agricultural products sold	75,477	7	20	1,163	3,076
Value of crops including nursery and greenhouse	43,622	8	20	958	3,072
Value of livestock, poultry, and their products	31,855	1	20	1,137	3,069
VALUE OF SALES BY COMMODITY GROUP ($1,000)					
Grains, oilseeds, dry beans, and dry peas	10,205	2	17	1,221	2,933
Tobacco	-	-	-	-	437
Cotton and cottonseed	-	-	-	-	626
Vegetables, melons, potatoes, and sweet potatoes	7,114	8	20	262	2,796
Fruits, tree nuts, and berries	(D)	9	20	(D)	2,659
Nursery, greenhouse, floriculture, and sod	22,053	7	20	148	2,703
Cut Christmas trees and short rotation woody crops	361	2	18	140	1,710
Other crops and hay	(D)	4	18	(D)	3,054
Poultry and eggs	(D)	1	20	(D)	3,020
Cattle and calves	(D)	3	19	(D)	3,054
Milk and other dairy products from cows	(D)	1	13	(D)	2,493
Hogs and pigs	90	6	18	1,403	2,922
Sheep, goats, and their products	163	5	18	751	2,998
Horses, ponies, mules, burros, and donkeys	797	7	20	279	3,024
Aquaculture	1,049	3	16	201	1,498
Other animals and other animal products	200	8	18	698	2,875
TOP CROP ITEMS (acres)					
Corn for grain	16,534	2	16	998	2,534
Forage - land used for all hay and haylage, grass silage, and greenchop	13,395	3	18	1,421	3,060
Soybeans for beans	5,382	5	14	1,173	2,039
Corn for silage	2,805	2	14	514	2,263
Vegetables harvested for sale	2,480	6	20	304	2,794
TOP LIVESTOCK INVENTORY ITEMS (number)					
Layers	(D)	1	20	(D)	3,024
Pheasants	(D)	1	16	9	1,544
Cattle and calves	8,009	1	20	2,168	3,060
Quail	(D)	5	12	(D)	1,386
Sheep and lambs	1,887	2	19	522	2,891

Other County Highlights

Economic Characteristics	Quantity
Farms by value of sales:	
Less than $1,000	294
$1,000 to $2,499	181
$2,500 to $4,999	100
$5,000 to $9,999	87
$10,000 to $19,999	78
$20,000 to $24,999	22
$25,000 to $39,999	27
$40,000 to $49,999	11
$50,000 to $99,999	35
$100,000 to $249,999	47
$250,000 to $499,999	23
$500,000 or more	28
Total farm production expenses ($1,000)	59,355
Average per farm ($)	63,617
Net cash farm income of operation ($1,000)	20,843
Average per farm ($)	22,340

Operator Characteristics	Quantity
Principal operators by primary occupation:	
Farming	443
Other	490
Principal operators by sex:	
Male	720
Female	213
Average age of principal operator (years)	57.2
All operators by race [2]:	
American Indian or Alaska Native	3
Asian	4
Black or African American	2
Native Hawaiian or Other Pacific Islander	-
White	1,421
More than one race	3
All operators of Spanish, Hispanic, or Latino Origin [2]	8

See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.
(D) Cannot be disclosed. (Z) Less than half of the unit shown.
[1] Universe is number of counties in state or U.S. with item. [2] Data were collected for a maximum of three operators per farm.

SECTION 22 INCOME FROM FARM-RELATED SOURCES

Report amount received before taxes and expenses in 2012.

		None	Dollars
1. Customwork and other agricultural services provided for farmers and others, such as plowing, planting, spraying, harvesting, preparation of products for market, etc. Exclude if customwork was an entirely separate business from your agricultural operation	0992	☒	$ .00
2. Payments received from cash rent or share payments from renting out farmland or payments from lease of allotments. Include payments for livestock pastured on a per-head basis, per-month basis, AUM basis, etc.	0993	☒	$ .00
3. Sales of forest products. Include timber, firewood, etc. Exclude sales of Christmas trees, short rotation woody crops, and maple products	0994	☐	$ 6,000- .00
4. Agri-tourism and recreational services, such as farm or winery tours, hay rides, hunting, fishing, etc.	1401	☒	$ .00
5. Patronage dividends and refunds from cooperatives	1402	☒	$ .00
6. Crop and livestock insurance payments received. Exclude payments received from casualty insurance, vehicle liability, blanket policies, and operator dwelling insurance	1404	☒	$ .00
7. Other income which is closely related to the agricultural operation. Include renting and leasing farm machinery and trucks, renting and leasing of livestock, bee colony rental, animal boarding, state fuel tax refunds, farm-generated energy, etc. Specify 1433	1403	☒	$ .00

SECTION 23 FARM LABOR

		None	Number
1. How many HIRED farm or ranch workers, including paid family members and office workers –			
a. Worked less than 150 days on this operation in 2012? Exclude contract labor	0941	☒	
b. Worked 150 days or more on this operation in 2012? Exclude contract labor	0942	☒	
2. How many UNPAID farm or ranch workers, including family members and office workers, worked on this farm or ranch?	3401	☒	
3. How many MIGRANT workers were on this operation in 2012? A migrant worker is a farm worker whose employment required travel that prevented the migrant worker from returning to his/her permanent place of residence the same day. Include hired and contract workers	3402	☒	

SECTION 24 GRAIN STORAGE CAPACITY

1. Were any facilities to store whole grains, oilseeds, or pulse crops on this operation on **December 31, 2012**?

1028 1 ☐ **Yes** - Complete this section 3 ☒ **No** - Go to SECTION 25

		Bushels
2. What was the total whole grains, oilseed, and pulse crops storage capacity on this operation? Include capacity of all structures normally used for storing whole grains and oilseeds	1029	

12101176

SECTION 25 PRODUCTION EXPENSES

Report total production expenses paid by this operation in 2012.

INCLUDE
- *expenses paid by you and your landlords*
- *expenses connected with performing customwork for others*

EXCLUDE
- *expenses not related to the farm business*
- *any expenses paid by the contractor*

EXPENSES PAID BY THIS OPERATION AND ITS LANDLORD(S)

		None	Dollars
1. Fertilizer, lime, and soil conditioners purchased – Include rock phosphate, gypsum, manure purchased, potting soil, growing media, and other organic materials. Include the cost of any custom application	1501	☐	$ .00
2. Chemicals purchased such as insecticides, herbicides, fungicides, other pesticides, etc. – Include cost of custom application	1502	☐	$ .00
3. Seeds, plants, vines, trees, etc. purchased – Include technology or other fees, seed treatments, and seed cleaning cost. Exclude items purchased for resale without additional growth.	1503	☐	$ .00
4. Breeding livestock purchased or leased, regardless of age – Include dairy cattle.	1504	☐	$ .00
5. All other livestock and poultry purchased or leased – Include stocker and feeder cattle, calves, sheep, lambs, feeder pigs, chicks, pullets, poults, horses, fish, goats, bee colonies, etc. Include livestock leasing expense.	1505	☐	$ .00
6. Feed purchased for livestock and poultry – Include grain, hay, silage, mixed feeds, concentrates, supplements, premixes, etc.	1506	☐	$ .00
7. Gasoline, fuels, and oils purchased for the farm business – Include diesel, natural gas, LP gas, motor oil and grease, etc.	1507	☐	$ .00
8. Utilities purchased for the farm business – Include electricity, farm share of telephone, water purchased, etc.	1508	☐	$ .00
9. Repairs, supplies, and maintenance cost for the farm business	1509	☐	$ .00
10. Labor –			
a. Hired farm and ranch labor – Include employer's cost for social security, worker's compensation, insurance premiums, pension plans, etc.	1510	☐	$ .00
b. Contract labor – Include expenses for labor, such as harvesting of fruit, vegetables, berries, etc. performed on a contract basis by a contractor, crew leader, etc.	1511	☐	$ .00
11. Customwork and custom hauling, such as custom planting, harvesting, etc. and custom hauling of grain, livestock, milk, manure, etc.	1512	☐	$ .00
12. Rent –			
a. Cash rent paid in 2012 for land and buildings – Include grazing fees	1513	☐	$ .00
b. Rent and lease expenses for machinery, equipment, and farm share of vehicles – Exclude custom hire	1514	☐	$ .00
13. Interest paid on debts –			
a. Secured by real estate.	1515	☐	$ .00
b. Not secured by real estate.	1516	☐	$ .00
14. Property taxes paid in 2012 – Include farm real estate, machinery, livestock, etc. for the farm business. Exclude taxes paid by this operation's landlords.	1517	☐	$ .00
15. Other production expenses – Include animal health cost, storage and warehousing, marketing expenses, insurance, etc. Exclude health insurance premiums and payroll taxes	1518	☐	$ .00
16. How much did your landlord(s) pay for the production expenses for this operation in 2012?	1519	☐	$ .00
17. What was the value of your landlord's share of the total sales produced by this operation? – Exclude cash rent	1349	☐	$ .00
18. What was the total depreciation expense claimed by this operation in 2012 for all capital assets? Estimate 2012 from 2011 if necessary.	1520	☐	$ .00

Number moved from this operation - For animals and poultry moved from this operation to another, such as for further feeding, report them as "sold." Cattle moved are not considered sold if they were moved to another operation for a short term, such as winter wheat or corn stubble grazing, or during the winter to public grazing land.

Cattle in feedlots - Do NOT include in cattle in feedlots:

- Cattle and calves sold or moved off the operation for further feeding
- Veal calves or any calves weighing less than 500 pounds
- Cull or dairy cows fed only the usual dairy ration before being sold

SECTION 15 - EQUINE

Exclude horses owned by this operation but stabled elsewhere. Mules, burros and donkeys on this operation should be reported regardless of ownership. Exclude feral equine.

SECTION 16 - SHEEP AND GOATS

Item 2 - Include ewes in both Item 2.a. and Item 2.a.i. Report goats based on utilization regardless of breed. Report pounds of wool shorn and mohair clipped in 2012 only.

SECTION 17 - AQUACULTURE

Include all sizes for each type. On a separate line, specify the sale of fish eggs, fry, or fingerlings for each type. Convert units such as bushels, bags, or gallons to number or pounds. Report the same production as either pounds or number.

SECTION 19 - COLONIES OF BEES

Item 2 - Report the number of bee colonies owned regardless of location. Report the pounds of honey collected in 2012 whether sold or not sold. Report package bees and other bees such as leaf cutter bees, and the sale of complete bee colonies, in Section 20, Item 3. Report beeswax and pollen in Section 20, Item 4. Report pollination fees in Section 22, Item 7.

SECTION 20 - OTHER LIVESTOCK AND LIVESTOCK PRODUCTS

Items 2f, 2g - Mink and Rabbits – Report the sales of only live animals.

Item 4 - Include pelts and any meat from mink and rabbits.

SECTION 21 - PRODUCTION CONTRACTS AND CUSTOM FEEDING

A production contract is an agreement between a grower and contractor (integrator) that specifies that the grower will raise an agricultural commodity and that the contractor will provide certain inputs such as seed, livestock, etc. The grower receives a payment or fee from the contractor, generally after delivery, which is less than the full market price of the commodity.

The grower should report amount of the specified commodity that you raised and delivered under production contracts in Items 2A - L. If you had multiple contracts to produce different commodities, report the appropriate amount of each commodity produced under each contract in the proper categories. Exclude marketing contracts, futures contracts, forward contracts, or other contracts based strictly on price. The contractor should not report commodities that were produced by the grower.

SECTION 22 - INCOME FROM FARM RELATED SOURCES

Report gross amounts received before taxes and expenses.

Item 2 - Exclude rental income from nonfarm property.

Item 3 - Include only those forest products cut from this operation, not items cut from other nonfarm timber acreage. Exclude income from a sawmill business. Report sales of Christmas trees, maple syrup or sap products in Section 8.

Item 7 - Include pollination fees.

SECTION 23 - FARM LABOR

Report the number of paid farm or ranch workers who performed agricultural labor on this operation in 2012. Include paid family members. Include workers such as hired bookkeepers, office workers, maintenance workers, etc., if their work was primarily associated with agricultural production on this operation.

Item 1 - Include any short term or temporary workers who may have worked only a few days. Exclude contract labor.

SECTION 24 - GRAIN STORAGE CAPACITY

Report total capacity of all structures normally used to store whole grains, even if they were not used in 2012. Do not report any capacity or usage of off farm public storage or capacity of structures leased to others.

SECTION 25 - PRODUCTION EXPENSES

Include farm production expenses paid by you or your landlord(s) for crops, livestock, or poultry produced on this operation in 2012 in Items 1 through 15. Include expenses associated with the generation of farm-related income reported in Section 22. Include expenses incurred in 2012 even if they were not paid in 2012. Estimate if exact figures are not known.

Contract growers or custom feeders - Do not report as production expenses the value of inputs provided by the contractor or livestock owner. Identify the items that were contractor provided in Section 21, Item 3.

Item 2 - Include surfactants and oils and other products used to increase a chemical's effectiveness.

Item 6 - Report the purchase cost of all grains, silage, hay, commercially mixed and premixed feeds, ingredients, concentrates, etc., fed to livestock or poultry on this operation. Contract livestock and poultry growers should not report the value of feed that was provided by a contractor. Do not report the value of feed raised and fed on this operation as an expense.

Item 9 - Include the cost of repairs and upkeep of farm machinery, vehicles, buildings, fences, and other equipment used in the farm business. Include expenses for repairs to machinery and equipment used only for custom work if income from those machines is reported in Section 22. Exclude repairs to vehicles not used in the farm business. Exclude expenditures for the construction of new buildings or the cost of additions to existing buildings.

Item 10a - Include labor expense for the farm business for gross salaries and wages, commissions, dismissal pay, vacation pay, and bonuses paid to hired workers, family members, hired managers, administrative and clerical employees, and salaried corporate officers. Include cost for benefits such as employer's social security contributions, unemployment compensation, worker's compensation insurance, employer paid life and medical insurance expense, pension plans, etc.

Item 10b - Include the labor costs of workers furnished on a contract basis by labor contractor, crew leader, or cooperative for harvesting vegetables or fruit, shearing sheep, or similar farm activities. Report costs for repair work done by a construction contractor in Item 9. Report the cost of customwork or machine hire in Item 11.

Item 12a - Exclude rent paid for operator dwelling or other nonfarm property. Exclude the value of shares of crops or livestock paid to landlords.

Item 13 - Report all interest expenses paid in 2012 for the farm business. Include interest paid on CCC loans in Item 13b. Exclude interest associated with activities not related to production of crops or livestock on this operation, such as land or buildings rented to others, packing sheds, or feed mills that provided services to others. Exclude interest on owner/operator dwelling where the amount is separated from the interest on the land and buildings on this operation.

Item 14 - Include real estate property taxes you paid on the acres and buildings you owned and used in the farm business and property taxes on equipment or livestock. Exclude property taxes on land or buildings rented to someone else, or property taxes paid on other property not associated with the farm business.

SECTION 26 - FERTILIZERS AND CHEMICALS APPLIED

Fertilizer - Report acres on this operation on which commercial fertilizer was applied during 2012 only once, even if multiple applications were made. Report fertilizer and manure expenditures in Section 25, Item 1.

Chemicals - Include acres on which custom application of chemicals was made. If multiple applications of chemicals for the same purpose (for example, herbicides) were made on the same acres, report the acreage only once. If chemicals were applied for different purposes, report the acres for each purpose that the chemicals were used. Report agricultural chemical expenditures in Section 25, Item 2. Estimate the acreage for spot treatments.

SECTION 27 - ORGANIC AGRICULTURE

This section is for production under the National Organic Program standards. Farms that are USDA certified organic, or exempt from certification because they sell less than $5,000 in organic products a year, should report in this section. Farms in the three year transition period should report in Items 1 and 2.

Item 3 - Total sales of organic products include all sales of the products, regardless of whether an organic premium was obtained. Sales of products from transitioning land or livestock should not be included in Item 3. Include gross value of agricultural production before expenses or taxes. Exclude the value of processed or value added items.

First Pioneer Farm Credit, ACA
Your First Choice For Financial Solutions

Mr. Robert A. Tucker, President
Stonegate Standardbred Farms, Inc.
500 West Hill Road
Glen Gardner, New Jersey
08826

Dear Mr. Tucker,

As per our discussion earlier in the week, I wanted to further discuss the impact down zoning would have on farm real estate owners in our area. First of all, First Pioneer Farm Credit specializing in lending to New Jersey agriculture has nearly $130,000,000 in first mortgages on farm properties in the north central part of New Jersey. All of these loans are secured with a first mortgage on the farm property. Additionally, we have nearly $50,000,000 in short term loans and almost all of them are secured with farm real estate. Down zoning would have a tremendous effect on almost all of our borrowers. First of all, interest rate to be paid by the customer is primarily determined by equity position. The loss of equity would most likely put First Pioneer in a position to increase the customer's interest rate.

Additionally, any new customers approaching First Pioneer would have additional costs involved in obtaining a loan commitment from our organization due to down zoning. The applicant would most likely be in a position to incur greater closing costs due to possibly having to pledge additional collateral in order to obtain the approval amount requested.

The additional costs coupled with a struggling agricultural economy could force a great many of our long time customers out of business.

We here at First Pioneer Farm Credit continue to work with the agricultural community and try to find ways to increase the viability of each and every operation with proper counseling and consulting. Down zoning would not contribute positively to our cause.

As always, if you have any questions or comments feel free in contacting us.

VERY TRULY YOURS,

HENRY GRUNBAUM
VICE PRESIDENT

Michael E. Webber is associate director of the Center for International Energy and Environmental Policy and assistant professor of mechanical engineering at the University of Texas at Austin.

FOR MORE THAN 50 YEARS FOSSIL FUELS AND FERTILizers have been the key ingredients in much greater global food production and distribution. The food-energy relationship has been a good one, but it is now entering a new era. Food production is rising sharply, requiring more carbon-based fuels and nitrogen-based fertilizers, both of which exacerbate global warming, river and ocean pollution, and a host of other ills. At the same time, many nations are grappling with how to reduce energy demand, especially demand for fossil fuels.

Although transportation, power plants and buildings receive a lot of policy attention as targets for reducing energy consumption, our food supply is often overlooked. In the U.S., about 10 percent of the energy budget goes to producing, distributing, processing, preparing and preserving the plant and animal matter we consume. That is a considerable wedge of the energy pie.

Examining our food supply through the lens of energy use reveals opportunities for smart policies, innovative technologies and new dietary choices that can potentially solve food and energy problems together. The same steps would also make our bodies, and our ecosystems, healthier.

FARM TO FORK IS HIGHLY INEFFICIENT

SIMPLE MATH shows that food production is an inefficient process. Plant growth is not energy-efficient: photosynthesis typically converts less than 2 percent of incoming solar energy into stored energy. That low rate is worsened when animals convert plant matter into beef (5 to 10 percent efficiency) or chicken (10 to 15 percent). We then ingest that food and convert it into human energy stored as glycogen in muscles and as fats—notably around our midsection.

Given the abundance of photons striking the earth every day, low efficiencies hardly seem to matter. But when faced with limits on land, freshwater, fertilizer runoff, and fossil-fuel affordability and emissions, the inefficiencies can be daunting. The energy used to make food is vastly greater than the amount of energy we get out of it. The U.S. expends roughly 10 units of fossil energy to produce one unit of food energy.

The magnitude of consumption is remarkable when one considers the entire population. A healthy, active adult male's nominal instantaneous power consumption is approximately 125 watts. That equates to roughly 2,500 nutritional calories per day, or about 10,000 British thermal units (Btu). Thus, the 312 million people in the U.S. need about one quadrillion Btu (one quad) of food energy every year. Because we use 10 units of fossil energy to produce one unit of food energy, feeding the population requires 10 quads—which is 10 percent of the total annual U.S. energy consumption of 100 quads. If we as a society wish to reduce our food-energy consumption, we need to find ways to reduce the 10:1 ratio of energy input to food output.

The food energy needed to feed the world's seven billion people is about 25 quads a year, which is only about 5 percent of the world's 500 quads of annual consumption. It is not that the rest of the world is more efficient than the U.S. Rather one billion people are hungry, another billion are at risk of hunger and many more simply do not consume much.

Extensive energy use has dramatically increased food production through innovations such as diesel-powered tractors, electric irrigation pumps, and fertilizers and pesticides made from natural gas and petroleum. Since the mid-20th century crop yields from this green revolution have gone through the

IN BRIEF

About 10 percent of U.S. energy consumption is for raising, distributing, processing, preparing and preserving the plant and animal matter Americans eat. **Energy use** can be cut by converting agricultural waste such as manure into power; implementing new, pilot-level farming techniques such as drip irrigation, no-till planting, laser-leveling of fields and GPS-driven machinery; reducing spoiled and wasted food, which amounts to 25 to 30 percent of all food produced; and eating less meat, which is energy-intensive to create. **The same steps** would make our bodies, and our ecosystems, healthier.

PRECEDING PAGES: PROP STYLING BY LAURIE RAAB

roof, and we have transformed deserts such as the Central Valley of California into the world's fruit baskets. At the same time, the percentage of workers needed for agriculture has plummeted.

Cheap energy, primarily petroleum, has also created transportation networks that have improved food distribution significantly, bringing us unexpected fare such as salads and fresh oranges in the middle of winter from far-flung corners of the globe. We expend more energy still to preserve and prepare our food.

When fossil-fuel prices were low and we did not care much about pollution or emissions, we did not worry about the energy waste. Now that prices are higher and we care more about environmental impacts, we have to improve that 10:1 ratio. The inefficiency could get even worse in the U.S. as more people, powered by cheap air conditioning, move into areas where local food production can support a mere fraction of the growing population (think Phoenix). In these cases, even more energy is used either to bring inferior lands into production through energy-intensive fertilizers and irrigation or to move food from remote markets.

Global trends will aggravate the challenge. World population is projected to grow to more than nine billion by 2050. Per capita energy and food consumption will rise, too: notably, as people get richer, they consume more meat, which is much more energy-intensive than other foods. And climate change implies that food production will be hurt by crop losses from droughts and floods, saltwater intrusion into aquifers, higher temperatures (which will decrease the effectiveness of photosynthesis in many places) and competition from biofuels for farmland. As a consequence, experts predict that food production will have to double by 2050.

LOCAL FARMING MIGHT NOT HELP

UNFORTUNATELY, thinking about some popular food production "solutions" through the lens of energy shows that they do not always help. For example, many people have latched onto the local-food movement, billing themselves "locavores," as an antidote to the energy used to transport food long distances and the energy intensity of large-scale industrialized agriculture. "Eat local" campaigns encourage residents to shop for local food from farmer's markets or nearby community-supported farms.

Spending our money in the local community rather than sending it far away can be economically valuable, and having a vibrant local-food system creates resiliency in the event of unexpected occurrences such as war or drought. Local farms, however, sometimes use marginal lands to produce nonnative crops that require more chemicals and more energy for irrigation, and they still get low yields. Strangely enough, shipping food thousands of miles can sometimes require less energy, emit less carbon dioxide and do less environmental damage.

For example, it is typically less energy-intensive to grow lamb in New Zealand, where the animals graze on rain-fed grass that grows mostly without fertilizer or irrigation, and ship it to the U.K. than it is to grow lamb in the U.K. using energy-intensive inputs. Further, large industrialized farms, outfitted with laser-leveled fields (to minimize water losses and fertilizer runoff) and GPS-equipped tractors (to optimize fuel use and crop density) and planted with genetically modified crops designed to use minimal water can be surprisingly resource-efficient when compared with a bunch of distributed farms that inefficiently use energy and water but are closer to home. A Stanford University study concluded that Big Agriculture has spared a lot of carbon emissions because of its yield improvements and economies of scale.

Vertical, urban farms or algae production for feed, now in prototype stages, also has the potential for even greater biomass production per square foot of land than local farms.

Some popular solutions for renewable energy actually complicate the food-energy system. Food-based feedstocks—corn, soy, sugar and palm—dominate the world markets for biofuels and create unhealthy competition for farmland and freshwater. In 2010 in the U.S., about 30 million acres—more than one fourth of overall corn production—were used to produce 12.7 billion gallons of ethanol. That share will rise significantly as the U.S. tries to meet the federal mandate that 20 percent of all liquid transportation fuel come from biofuels by 2022.

EXPLOIT THE WASTE

DESPITE ALL THE CONCERNS of the food-energy nexus, there is some cause for optimism. With different innovations, policies, markets and cultural choices that focus on reducing waste and inefficiencies, we can reduce the 10:1 ratio of energy used to energy eaten, as well as mitigate environmental damage.

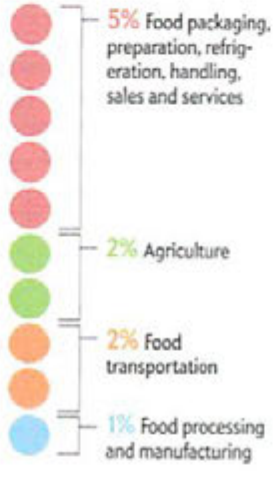
A first step is to stop using corn kernels for starch-based ethanol, which is the current U.S. practice. Let us use the kernels to feed people and livestock and use only the cellulosic stover (the

WEIGHTY CHALLENGE

A Big Bite of the Energy Pie

A surprising 10 percent of the U.S. energy budget is used to produce food for 312 million Americans. Greater efficiency in farming, transport, processing and storage could reduce the demand, especially for fossil fuels.

U.S. Energy Budget Spent on Food



Graphics by Jen Christiansen

stalk and leaves of the plant) to make ethanol or synthetic fuels. U.S. energy policy already includes a push for this solution. The Energy Independence and Security Act of 2007 has a renewable fuels standard that mandates that we consume 36 billion gallons of biofuels per year by 2022 and that 16 billion of those gallons come from cellulosic sources. The latter requirement is a rare acknowledgment by politicians in Washington, D.C., that corn might not solve all our energy problems; experts predict we can produce only up to 15 billion gallons a year from corn-based feedstocks grown on available farmland without undercutting our ability to feed ourselves.

The aggressive biofuels rollout, however, pushes the food-based forms online the quickest, with cellulosic forms many years behind because they are more difficult to produce. Nature has designed cellulosic materials over many millennia to *not* break down. Breaking them down for ethanol means we have to reverse nature, which requires enzymes—code for money; producing enzymes at industrial scales is expensive. Nevertheless, we can overcome the technical hurdles and move more strongly in that direction. Using cellulosic sources instead of food-based sources can help the U.S. energy supply and also free up tens of millions of acres for other food production.

Another step to improve the food-energy equation is to convert agricultural waste products into power. Livestock manure is one rich resource. In the old days, small farms had a mix of animals and a variety of crops in one location; farmers spread manure instead of chemical fertilizer on fields of crops. Today, with large farms that grow just a handful of mega crops and with concentrated animal-feeding operations, that closed-loop practice has been lost. The massive amounts of manure created by large animal operations far exceed any local demand, and it is too expensive to ship cross-country to big farms. The system also creates environmental hotspots such as manure lagoons, which are significant emitters of greenhouse gases and sources of toxic waste. The lagoons are remarkably energy dense, however, and there are many of them; U.S. farms generate more than one billion tons of manure annually.

Anaerobic digesters and micro turbines could convert that manure into enough renewable, low-carbon biogas-fired electricity to displace 2.5 percent of the nation's power generation while reducing greenhouse gas emissions. This approach would also yield another revenue stream for farmers. Researchers at leading agricultural institutions such as Texas A&M University and Cornell University College of Agricultural and Life Sciences are looking at new ways to incorporate anaerobic digestion of manure into farm operations. Juehnde, a small German village working with Frank Mitloehner of the University of California, Davis, is generating so much biogas for heating and cooking that the town has become independent from the national gas grid. Policy makers could encourage the installation of more digesters and turbines by giving farmers access to low-cost capital, creating incentives such as property-tax breaks for the equipment, offering information and training sessions so that potential users know how to operate the systems, and establishing net metering—a system allowing any electricity generated on-site to reduce farmers' utility bills.

Another waste stream that can save food energy is carbon dioxide from smokestacks at coal plants. It can be used to grow algae for human food, animal feed and fuel, thereby avoiding some traditional energy inputs for agricultural production. Some people already eat algae directly for nutritional reasons, and some national restaurant chains use them as a stiffening ingredient. Algal lipids can also be converted into biodiesel, providing a low-carbon, domestic, renewable fuel that is made from something other than food-based feedstock. The remainder of the algal biomass is typically made up of proteins and carbohydrates, which might displace corn-based feed for animals, making more corn available for food and thereby contributing positively to the food-energy nexus. Some algae grow well in brackish water or saltwater, too, eliminating demand for freshwater. Private industry (through a variety of start-ups such as Solazyme), national labs such as the National Renewable Energy Laboratory, and universities such as the University of Texas at Austin and the University of California, San Diego, all have active testing and pilot programs. Although algal solutions seem to be decades away from large-scale implementation, their promise warrants additional research, so policy makers should continue funding development.

MORE CROP PER DROP

SIMPLY IMPLEMENTING innovative agricultural techniques that have already been perfected in pilot programs on a much wider scale could significantly reduce the 10:1 energy-food ratio. For example, drip irrigation provides more crop per drop, sparing freshwater and the energy needed to pump it. The conventional approach—the center-pivot sprinklers that create alienlike green crop circles in the middle of brown deserts (easily visible when flying overhead)—is extremely wasteful, spraying water into the air where a major fraction evaporates. Droplets that do land on crops are likely to hit the leaves and stalks instead of the roots, causing more evaporation loss. In a typical drip-irrigation setup, long sections of narrow tubing laid at the bottom of plants sown in a row deliver water directly to the roots. Researchers at Iowa State University estimate that corn farmers in that state would use 40 percent less water and lower their energy bills by 15 percent with drip irrigation. Half a dozen large farm suppliers now offer the systems, which, if used widely, could save thousands of megawatt-hours of electricity nationwide every year. Incentives to switch to drip irrigation, combined with penalties for wasted water, might hasten adoption.

No-till agriculture is another promising approach. It reduces the disturbance of soils by using special planting equipment that places seeds into untilled soil through narrow surface slots rather than the blunt approach of turning the soil. Disturbing the soil less reduces labor, irrigation, energy, erosion and carbon emissions. Argentina is the world leader; more than half the farms there deploy this advanced technique. Training for farmers about the advantages of no-till can be implemented through agricultural extension services nationwide.

Laser-leveled fields can minimize erosion, irrigation and fertilizer runoff. Most fields have a gradual slope, which causes unequal water distribution and uneven collection of runoff. Rather than risking one portion getting less water than it needs, farmers often overfill the entire field, with the excess spilling over into local waterways. By making fields level, farmers waste less energy pumping water, and less fertilizer is needed because less runs off.

The advent of GPS-enabled tractors, combines and other machinery—today a standard feature offered by manufacturers such as John Deere—has introduced the concept of "precision

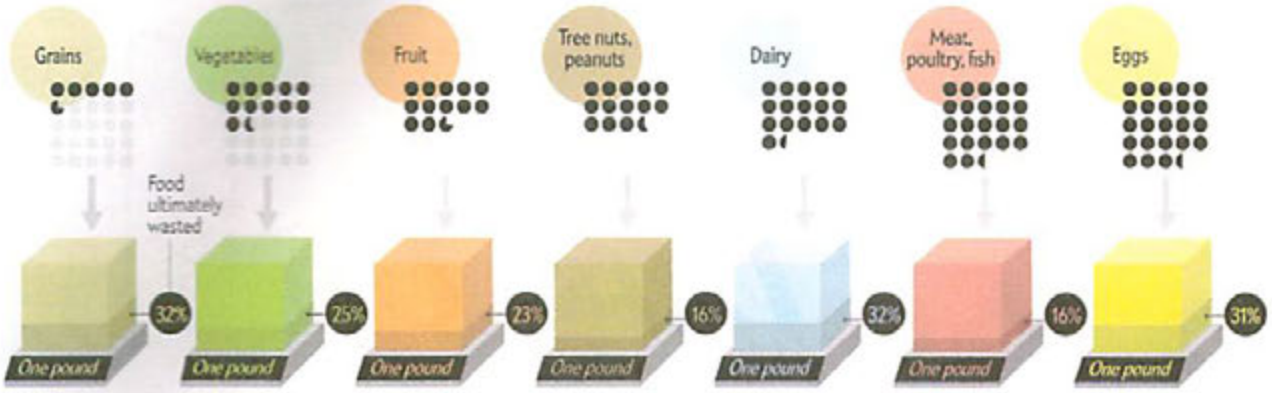
SOURCE: UNIVERSITY OF TEXAS AT AUSTIN

SLIMMING DOWN

More Efficient Foods, Less Waste

Different foods require vastly different amounts of energy to produce. Meat is four times as demanding as grains are. If consumers would gravitate toward less intensive foods, energy use would drop. Reducing the enormous amount of food that is wasted would save energy as well.

Energy Required to Produce Food British thermal units (Btu) of energy inputs per pound of food produced (● = 1,000 Btu)



farming," which drives up productivity and drives down energy use. GPS guidance allows farmers to tend fields and plant crops literally to the inch, reducing wasted space, time and fuel, without even needing to steer machines with their hands. Although the upgrades for a moderately sized farm might cost $10,000, researchers at Purdue University have shown that the benefits outweigh the cost. For one thing, fuel use decreases. Incorporating GPS with field diagnostics allows farmers to map out soil conditions and fine-tune the application of chemicals, which can vary from one end of a field to the other, ultimately requiring less. Fields can also be worked at night and during fog and rain, when human visibility is limited, pushing productivity up.

BETTER BEHAVIOR

REDUCING WASTED FOOD can also lower the 10:1 ratio of energy used to food eaten. An egregious 25 percent or more of the food grown is wasted annually. That massive amount represents 2.5 percent of annual U.S. energy consumption—more energy than all the ethanol produced in 2011 in the U.S. and more than the energy that will be produced in 2030 from lifting drilling restrictions today on the outer continental shelf. Simply decreasing the amount of food we throw away might reduce energy consumption and greenhouse gas emissions more over the next decade or two than many of the expensive or controversial energy supply policies that have been proposed.

Many methods of reducing food waste can begin tomorrow. We can invest in diagnostics that monitor food spoilage instead of using the crude date-based labeling system that has been in place for several decades. One example is temperature- and time-sensitive inks on food packaging that cause labels to change color if the food has been exposed to the wrong temperature for too long. Start-up companies produce these labels, which could spare a lot of food that is unnecessarily thrown away by stores that are worried about making their customers sick. The labels could indeed also prevent a lot of illnesses induced by spoiled food. Requiring companies to keep track of the temperatures that food has been exposed to—in addition to how long the food has been packaged—might give retailers and consumers better information about the risks of spoilage.

Different attitudes and dietary choices can help, too. Restaurants can stop serving mammoth portions, and consumers can stop bragging about their conquests at all-you-can-eat buffets. More extra food can be kept and eaten as leftovers. We can shift our diets to replace at least some of our energy-intensive meats with less energy-intensive fruits, nuts, vegetables, beans and grains. These behaviors do not require invention; they just require new thinking. Many of them end up saving consumers money as well. Having meatless Fridays or veggie Mondays might start to get us there.

As the original green revolution showed, large-scale changes can be implemented relatively quickly over just a few decades. The changes can be dramatic, achieving outcomes far better than anticipated. Yet surprises can arise, too: years of abundant food production have increased the incidence of obesity and aggravated climate change. Technology alone is not enough; even with the original green revolution, hunger has not been solved. A global approach to reducing the energy waste in food that incorporates new behaviors, attitudes and policies will be critical to widespread success. There is no reason to think this new green revolution will be any different. SA

MORE TO EXPLORE

Wasted Food, Wasted Energy. Amanda D. Cuéllar and Michael E. Webber in *Environmental Science and Technology*, Vol. 44, No. 16, pages 6464–6469; July 21, 2010.
BP Foreseer project, a tool to predict trade-offs among energy, water and land use: http://bit.ly/rCqkNL

SCIENTIFIC AMERICAN ONLINE

For an interactive graphic revealing how much energy is required to produce various foods, see ScientificAmerican.com/jan2012/webber