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Comments on Final Report: Economic Analysis of a Program to Promote Clean Transportation Fuels in the Northeast/Mid-Atlantic Region, released August 2011.

October 20, 2011

Dear Mr. Dick,

The Wilderness Society (TWS) was unable to attend the stakeholder meeting in Boston on September 22, 2011 to discuss the Economic Analysis of a Program to Promote Clean Transportation Fuels in the Northeast/Mid-Atlantic Region. We are providing these written comments in lieu of attending that meeting.

Reducing greenhouse gas emissions from transportation fuels is a critical but daunting task that requires balancing many competing resource demands, while protecting important landscape values. TWS commends NESCAUM for anticipating key information needs for the development of a Clean Fuels Standard, and for modifying earlier approaches to reflect the realities of feedstock availability in our region. In keeping with our primary interest in wildland protection and forest restoration in this region, our comments relate to three aspects of the CFS economic analysis: 1) environmental impacts and quantifying broader economic impacts; 2) carbon intensities; and 3) feedstock supply.

Environmental and Economic Impacts

We would like to see a broader definition of economic impacts that accounts for impacts on the environment, competing wood users, landowners and consumers.

- A CFS should not proceed without at least a framework for assessing environmental impacts, particularly forest impacts from increased forest removals as well as soil impacts from increased use of crop residues and the planting of energy crops on marginal or abandoned farmland. The

quantities of feedstock materials contemplated in the report will significantly change land management across thousands of acres, and decisions about a Clean Fuels Standard should account for these effects. Our particular sustainability concerns focus on the possible impacts of a region-wide increase in timber harvest volumes, and a change in equipment to handle more tops and limbs that could change the conduct of logging operations across a wide region. Given harvest removals in the 11-state region of about 27.7 million dry tons for the most recent set of sample years (FIA EVALidator – this includes trees killed but not utilized), increasing forest removals by 4.1 million dry tons under the high-availability assumptions would be a significant increase. Simultaneous increases in wood use for heating and electricity would magnify the impacts.

- Economic impacts should also include effects, both positive and negative, on forest landowners and farmers (p. 53)[1], and on consumers who experience changes in the prices of firewood and locally produced foods (p. 54).

  The California Air Resources Board (CARB) has convened a Low Carbon Fuel Standard (LCFS) Sustainability Workgroup (the LCFS Sustainability Workgroup) which is developing a framework for how sustainability provisions can be incorporated and enforced as part of California's LCFS (draft attached to these comments). We recommend that the NE-MA CFS coordinate closely with CARB to ensure a consistent approach that may eventually provide a model for national policy. The LCFS Sustainability Workgroup has identified three major components of sustainability: environmental, social, and economic sustainability. The LCFS Sustainability Workgroup was convened, in part, because there was recognition that although the LCFS does address some environmental impacts through the analysis of fuel pathways, it does not yet address environmental sustainability issues such as biodiversity; protection of specified sensitive lands; biomass collection volumes; water quality and adequate water supplies; soil quality and erosion; and localized air quality impacts.

  The LCFS Sustainability Workgroup has enumerated twelve principles by which sustainability can be measured:

  1. Legality
  2. Planning, monitoring, and continuous improvement
  3. GHG emissions
  4. Conservation and biodiversity
  5. Soil
  6. Water
  7. Air
  8. Use of technology, inputs and management of waste
  9. Human and labor rights
  10. Rural and social development
  11. Local food security
  12. Land rights

[1] All page numbers in these comments refer to pages in: NESCAUM. August 2011. Final Report: Economic Analysis of a Program to Promote Clean Transportation Fuels in the Northeast/Mid-Atlantic Region.

The environmental sustainability principles include Principles 4, 5, 6 and 7 above and the LCFS Sustainability Workgroup has solicited comments on a draft document describing relevant criteria and indicators pertinent to those environmental sustainability principles with respect to biomass and biofuel operations. TWS, in coordination with the Natural Resources Defense Council, has submitted comments on the draft LCFS environmental sustainability principles for biomass and biofuels. A copy of that letter and its accompanying attachment are included with this letter.

Carbon Intensities

- Many carbon intensities (CI's) used in the analysis are based on national data that are not tailored to our region. Although we may not have sufficient data to provide reliable substitute values, the report should at least indicate that the CI's for our region are likely to be different from the national ones, and explain why our region differs. The negative CI for virgin cellulosic ethanol (p. 20 Table 2-3) is based on the national RFS, which assumes that byproduct electricity is exported to the grid, which lowers the CI for the biofuel due to substitution for higher-emissions electricity sources. Substitute electricity in the Northeast and MidAtlantic is unlikely to have the same GHG profile as the rest of the nation. To the extent that GHG emissions are lower than average, the GHG benefits of surplus electricity from biofuel plants would also be lower. The CI from the RFS also assumes that cellulosic ethanol is made from corn stover or switchgrass; these figures would not apply to woody feedstocks, and do not account for forest carbon impacts of wood removal.[2]

  Carbon intensities for our region would likely be higher than the national crop-sourced CIs, particularly for virgin materials from live trees which, if left unharvested, would continue to store and accumulate carbon. Assuming that biomass is also utilized for electricity and heating, and that biofuel production continues in future decades, this immediate carbon effect will extend for many decades as overall forest stocks fail to recover from stepped-up harvest levels. Although precise CIs will depend upon harvest practices, forest regrowth, and the future fate of source forests, the CI for virgin wood materials is likely to be positive rather than negative over the modeling period.

  Recent research on the soil carbon impacts of utilizing crop waste for energy may introduce similar limitations on the crop side (see US Billion-Ton Update: Biomass Supply for a Bioenergy and Bioproducts Industry, August 2011, US DOE Oak Ridge National Laboratory, p. xviii "The crop residue potential was determined to be somewhat less than what was in the 2005 BTS due to the consideration of managing for soil carbon during crop residue removal and not allowing the removal of residue from conventionally tilled acres").

- Assumptions used to construct the scenarios make the results counterintuitive – for instance yielding higher dependence on biofuels under the electricity and NG scenarios than under the

[2] For details on these impacts, see Manomet Center for Conservation Sciences. 2010. Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy Resources. Walker, T. (Ed.). Contributors: Cardellichio, P., Colnes, A., Gunn, J., Kittler, B., Perschel, R., Recchia, C., Saah, D., and Walker, T. Natural Capital Initiative Report NCI-2010-03. Brunswick, Maine.

biofuels scenario. Rather than *assume* a pre-determined CI for each scenario, it would be more logical to assume only that the primary fuel for each scenario is least expensive and most acceptable to consumers, then let the modeling determine level of use and the CI will then flow from level of use. In general, as biofuel production expands, the CI will rise as the lowest-CI sources will be used first, so that expanded production brings smaller and smaller marginal CI reductions.[3]

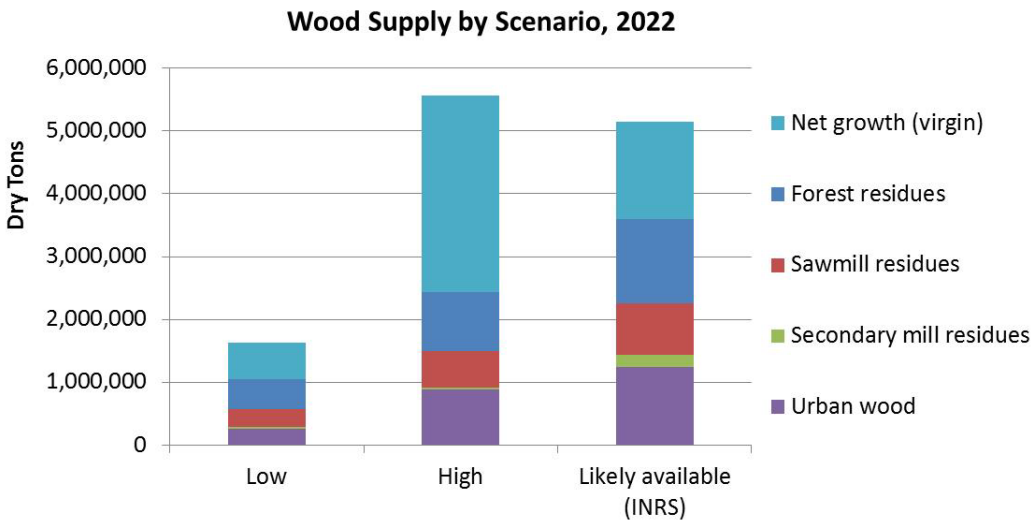
To some extent, the modeling approach does perform this way. The model already separates waste from virgin feedstocks for ethanol (though it is less clear whether this applies for biogas), and assumes that lower-CI waste sources will be used first, followed by virgin in-region sources and finally out-of-region. Within the virgin category, however, feedstocks will have very different CIs depending upon whether they are from wood or crop sources. Even waste sources will have varied GHG emissions depending on the alternative fate of the material (landfill, mulch, burning, forest decomposition, plowing under, etc.) Rather than arbitrarily assign the low end of the CI range to every feedstock source under the biofuels scenario, it would make sense to start at the low end of a given category and increase the CI as use approaches the total available. Once a model run produces a solution that meets the intended CI reduction based on the assumed range of CI values, sensitivity analysis with higher and lower CI assumptions could then be performed, but retaining the assumption that CI will rise with more intensive use. This approach would provide a more realistic picture of the GHG impacts of expanded biofuels use, and could illustrate the threshold effects of using up waste sources and stepping up use of virgin material. Quite possibly, a CFS might be workable only at the level where waste sources are fully utilized, and it would be useful for policy-makers to know if this is the case so that targets could be set at this level.

Supply Estimates

- The original feedstock supply study (Introducing a Low Carbon Fuel Standard in the Northeast: Technical and Policy Considerations, July, 2009, prepared by Northeast States Center for a Clean Air Future) assumed that wood sources for biofuels would total about 3 times the quantity of crop sources. The latest analysis assumes that only 48% of regional cellulosic ethanol feedstocks are from woody materials in 2013 and 13% by 2022 (after energy crops expand dramatically). This revised estimate is much more realistic for wood, but remains very optimistic for dedicated energy crops in later years. In order for policy-makers to assess the likelihood of these supplies being forthcoming, it would be helpful to provide estimated acreages of land required to meet these supply assumptions.

  Language in the report (p. 30 and p. A-3) describes the high-availability biomass range as a "more optimistic depiction of ***actual*** biomass supply". The high availability assumptions for wood sources are slightly above the original INRS "likely available" feedstock estimates, with much more wood sourced from virgin material. Increasing regional harvest of live trees by this amount (about 6 million green tons) would imply major changes to forest conditions and a greater carbon intensity due to impacts on standing forest carbon stocks.

[3] On p. 17 the high-price oil case assumes that CI increases as we use less-desirable oil sources; the same thing will happen with biomass.



Similarly, the report text (p. 30) implies that supply estimates are conservative because "estimates account only for biomass supplies that would be potentially available additional to biomass currently being supplied to existing markets (e.g. pulp, paper and pellet production, existing landfill gas operations). In other words, these quantities could be theoretically available without significantly affecting other markets for biomass (***assuming the current level of demand*** from these other markets does not expand)" [emphasis added]. There is no explicit mention here of expanded use for other energy applications such as electricity or heating with wood chips or pellets, uses that are highly likely to expand. Assuming constant demand from competing uses is actually an overly optimistic assumption, not a conservative one.

- It would be helpful to incorporate in the report the quantities of each feedstock that are used under each scenario. The NE-MA Bioenergy Calculator indirectly provides this information for cellulosic ethanol.[4] However, it is difficult to distinguish quantities of fossil natural gas from biogas, or the specific mix of materials used to make biogas. In Table 2-8 on p. 30 biogas is listed as a possible product from every feedstock source. It would be helpful to report quantities of each distinct feedstock utilized for biogas production under each scenario, as some are waste products and others require more intensive exploitation of farm and forestland, with GHG and other environmental consequences, as well as effects on competing users.

  For purposes of monitoring the impacts of a Clean Fuels Standard, as NESCAUM proceeds to program design we suggest that reporting of feedstock quantities, types and source locations should be an integral part of the program. The California Mandatory Reporting Regulation for Greenhouse Gas Emissions (the CA MRR) may offer a precedent to build upon. The CA MRR requires the identification, calculation and reporting of all direct emissions of CO_2 from the combustion of biomass-derived fuels. For forest-derived wood and wood waste the reporting entity must report

[4] Modeling prioritizes first low-CI sources, then higher-CI in-region sources, and finally out-of-region sources. As use expands, it is possible to determine when in-region waste sources are fully utilized and the next increment – virgin sources - kicks in, followed finally by imports.

the bone-dry mass received, and the name, physical address, mailing address, contact person with phone number and email address, and corresponding identification number under which the wood was removed.[5] This data collected pursuant to the CA MRR comprises a useful first step to enable California to track potential impacts generated by the utilization of biomass-derived fuels. Further refinements to the CA MRR may increase the effectiveness of this data collection exercise, including the addition of requirements for the reporting of more specific information including: 1) type of forest material collected for biomass combustion (e.g. tops or branches, slash, or boles), and size and weight; and 2) more specific geographic information regarding the collection or source location of biomass (this information might be derived from an identification number under which wood is removed, but that would require more data mining or even additional data collection).

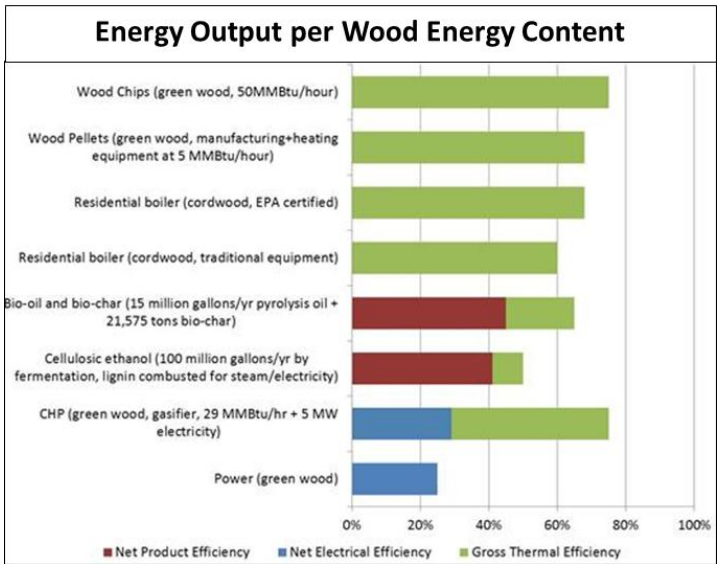
Conclusion

One of the questions posed to stakeholders in preparation for the September 22 meeting was "Are there alternative programs and policies that might provide a similar level of environmental and energy benefits in the region?"

The best return on investment to reduce energy-related GHG emissions – across all sectors from electricity to transportation to space and process heating – is demand-reduction through efficiency and behavioral changes. We believe that if the funds contemplated for a CFS program were instead diverted to such programs as swap-out rebates for old high-mpg vehicles, public transit coupons, and user friendly ride-sharing databases, the energy savings might well be much higher at lower administrative cost.

From a relatively narrow focus on wood energy opportunities and limitations, TWS would suggest that in the Northeast a focused program that incentivizes conversion from fossil fuel to wood heat, at both residential and commercial/industrial/community scales, could produce substantially more greenhouse gas reductions than a program that incentivizes biofuel production from the same wood resource. Energy conversion efficiencies for wood heat are approximately twice the conversion efficiency for liquid fuels if waste heat is not captured for beneficial uses. The scale of operations for wood heat can be much smaller than that for biofuels, as economies of scale are less significant, hence lowering transportation emissions as a secondary benefit.

[5] CA MRR Section 95103(j)



Adapted from Manomet Center for Conservation Sciences. 2010. Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy Resources. Walker, T. (Ed.). NCI-2010-03. Brunswick, ME

Early in the process of investigating a Low Carbon Fuel Standard, consideration was given to a unified policy for transportation and heating fuels. A subsequent study outline proposed to model thermal credits within a predominantly transport-oriented standard, but that element seems to be missing from the current analysis. Given the significant efficiency advantage for wood heat over wood conversion to biofuels or wood-based electricity to power electric vehicles, a policy that incentivizes wood use for transportation in isolation could encourage inefficient use of limited regional energy resources. We urge NESCAUM to at least reflect the effects of such a stand-alone policy in their assessment of economic effects.

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Thank you for the opportunity to comment, and please feel free to contact us with a response or with further questions.

Sincerely,

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Sept 26, 2011

Via electronic submittal

Michael Waugh, Chief
Criteria Pollutants Branch
California Air Resources Board
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RE: LCFS Principles 4, 5, 6, 7 for Biomass and Biofuel Production

On behalf of its 90,000 California members, The Wilderness Society (TWS) is writing to provide comments on the environmental sustainability principles the California Air Resources Board (ARB) is developing for biomass and biofuel production pursuant to the California Low Carbon Fuel Standard (LCFS). TWS commends ARB and its staff for their continued leadership in developing sustainable policies for reducing greenhouse gas emissions. Timely consideration of sustainability issues and the development and identification of methodologies for ensuring sustainability will be important in ensuring that California's landmark climate policies do not result in perverse environmental outcomes. Well-designed climate policies will help foster healthy and resilient communities, spur clean technology development, and maintain economic growth. We offer the following comments on the July 14, 2011 draft of LCFS Sustainability Principles 4, 5, 6, and 7 with respect to Biomass and Biofuel Production (the Principles) and offer our assistance to work with ARB on the recommendations we suggest.

Summary of Recommendations:

1) ***Adopt revisions to the Principles suggested on August 9, 2011 by the Natural Resources Defense Council (NRDC), with the further inclusion of language recognizing current federal renewable fuels law which makes eligible biomass from non-federal or tribal lands, but not from federal lands, for conversion to biofuels;***
2) ***Include additional language in the Principles that specifically recognizes the limitations of threshold concepts for purposes of natural resource management;***
3) ***Integrate and coordinate biomass sustainability efforts pursuant to the LCFS program with related efforts pursuant to other AB32 programs affecting biomass utilization***

such as the Renewable Portfolio Standard (RPS) and the Mandatory Reporting Rule (MRR) and cap-and-trade program; and

4) ***Provide further information with respect to the LCFS Sustainability Workgroup workplan beyond December 2011, including, among other things, a timeframe for possible development of environmental sustainability provisions related to any increased demand for natural gas extraction spurred by the LCFS program and further information about the workplan for assessing how environmental sustainability principles will be incorporated into the LCFS program.***

TWS requests the adoption of the revisions to the Principles suggested on August 9, 2011 by NRDC, with the further inclusion of language recognizing current federal renewable fuels law which makes eligible biomass from non-federal or tribal lands, but not from federal lands, for conversion to biofuels.

TWS supports the suggested revisions submitted on August 9, 2011 by NRDC, subject to the qualification in the succeeding paragraph. The revisions suggested by NRDC provide additions that are critical to ecologically robust Principles including ensuring that natural forests are not converted to plantations or simplified systems or non-forest uses; and ensuring that erosion, roads and other mechanical disturbances are minimized.

TWS recommends that Section 4.2 of the Principles make clear that the source of biomass for biofuels is constrained by the Energy Independence and Security Act of 2007 (EISA), as amended. Section 201(1)(I)(iv) of EISA excludes from eligibility for conversion to biofuels biomass harvest from federal lands.

TWS requests the inclusion of additional language in the Principles that specifically recognizes the limitations of threshold concepts for purposes of natural resource management.

Threshold concepts (e.g. designation of "degraded" lands) are increasingly being used in the context of natural resource management. While thresholds can be useful for prioritizing management and restoration areas, such concepts have limitations and reliance upon threshold concepts can result in environmentally undesirable outcomes. While grasslands that are not degraded and maintain native species composition should be "no-go areas" as described in the NRDC comment letter to the Principles on August 9, 2011, it does not follow that degraded grasslands should be presumed to be of low ecological value. Degraded lands often contain

important biodiversity and may be recoverable toward desired or healthy conditions via simple adjustments. Designation of an area as "degraded" may not adequately characterize the capacity of future ecosystem behavior and may encourage management decisions that result in the destruction or conversion of important natural resources.

TWS strongly urges ARB to integrate and coordinate biomass sustainability efforts pursuant to the LCFS program with related efforts pursuant to other AB32 programs affecting biomass utilization such as the Renewable Portfolio Standard (RPS) and the Mandatory Reporting Rule (MRR) and cap-and-trade program.

In order to adequately track impacts to forests caused by biomass utilization, it will be necessary to capture spatial data regarding the source of biomass feedstocks, among other things, and to analyze that data in connection with larger scale data (e.g. regional or forest scale data). The MRR will provide some relevant data for this analysis, and the analysis will be relevant to the LCFS program, the RPS program and the cap-and-trade program (although the cap-and-trade regulation, as currently drafted, presumes minimal carbon impacts from biomass utilization, it is not clear that this presumption will be borne out as the program is implemented). In order to streamline costs and ensure consistent methodologies and approaches, integration of efforts to ensure biomass sustainability across programs is warranted. Furthermore, other efforts to monitor impacts to forests, such as the adaptive management effort associated with the forest protocols in the cap-and-trade rule, will necessarily be utilizing very similar data sets and analyses which would thus provide additional efficiencies and cost-savings from coordinated sustainability efforts.

TWS asks that ARB provide further information with respect to the LCFS Sustainability Workgroup workplan beyond December 2011, including, among other things, a timeframe for possible development of environmental sustainability provisions related to any increased demand for natural gas extraction spurred by the LCFS program and further information about the workplan for assessing how environmental sustainability principles will be incorporated into the LCFS program.

TWS strongly commends ARB for its leadership in including indirect land use impacts in the design of the LCFS. TWS further commends ARB in addressing additional environmental sustainability issues through the development of the environmental sustainability principles for

biomass and biofuels. Timely and early implementation of sustainability measures for biomass and biofuels will provide much needed protection of forests and other natural resources. The additional development of environmental sustainability measures for other fuels types will also be important, but should not delay the implementation for biomass and biofuel related measures. TWS seeks further clarification from ARB regarding both the timeline for development of environmental sustainability measures for other fuels types and the timeline for assessing how the Principles for biomass and biofuels will be incorporated into the LCFS program.

Once again, TWS appreciates the hard work and leadership of ARB in developing and implementing comprehensive climate policies that will mitigate greenhouse gas emissions which threaten serious disruption of ecosystem services as well as species extinction. TWS also appreciates ARB efforts to ensure that California's climate policies promote sustainable stewardship of natural resources. We offer our assistance in working on the recommendations in this letter. If you have any questions, please contact Ann Chan at ann_chan@tws.org.

CC: Edie Chang – ARB Stationary Source Division

DRAFT

LCFS Sustainability Principles, Criteria, Indicators

Principles 4, 5, 6, 7

Staff at the Air Resources Board (ARB) has drafted criteria and indicators for four principles that the Low Carbon Fuel Standard (LCFS) Sustainability Workgroup has discussed to date; they include Conservation and Biodiversity, Soil, Water, and Air. Staff will continue to work with the Sustainability Workgroup on these four principles and to develop similar criteria and indicators for the remaining eight principles. Staff's intention was to capture the most important concepts for each principle and describe with some detail the requirements of the responsible operators from the farm level to the biofuel producer. We will continue to work on developing ideas for incentives, reporting, and other important topics related to LCFS sustainability provisions.

The Sustainability Workgroup listed the following twelve principles:

Principles

1. Legality
2. Planning, monitoring, and continuous improvement
3. GHG emissions
4. **Conservation and biodiversity**
5. **Soil**
6. **Water**
7. **Air**
8. Use of technology, inputs and management of waste
9. Human and labor rights
10. Rural and social development
11. Local food security
12. Land rights

Principle 4: Conservation and Biodiversity

Biological diversity is conserved or enhanced by protecting land with high biodiversity value or high carbon stock and avoiding negative impacts from biomass production and biofuel operations.

Responsible Operators: Feedstock Producer, Feedstock Processor, Biofuel Producer

4.1 A good practices environmental management plan (part of Principle 2) is implemented that includes practices that conserve or enhance biological diversity.

4.1.1 Conservation values within areas of biomass/biofuel operation are identified through an environmental impact assessment, and the protection of those areas is established.

4.1.2 The responsible operator uses maps and databases to help identify conservation values.

4.1.3 If the impact assessment identifies areas where biomass/biofuel production directly affects ecosystem functions and services, the responsible operator shall show that practices are in place to mitigate negative impacts (e.g. creation of riparian buffer zones, maintenance of natural barriers or hedgerows, etc.)

4.1.4 Fragmentation of habitats is minimized by the protection, restoration, or creation of ecological corridors and buffer zones.

4.2 No areas defined as nationally or internationally as protected or classified as High Conservation Value (HCV) areas shall be used after _____ unless legally authorized. (Refer to www.hcvnetwork.org)

4.2.1 Biomass production in areas of high biodiversity is avoided.

4.2.2 Biomass production on grassland with high biodiversity is avoided.

4.2.3 Forest conversion to plantations or non-forest land uses is avoided.

4.3 The status of rare, threatened, and endangered species and their habitats are identified and their conservation taken into account in management plans and operations.

4.3.1 The responsible operator shows compliance with all national and local laws protecting the conservation of rare, threatened, or

endangered species or habitats and takes effective steps to maintain conservation of those areas.

4.3.2 The responsible operator shows that the management plan considers rare and endangered species that may be outside of the geographic area of biomass/biofuel operations but have migration or travel routes that cross into the area of biomass/biofuel operations.

4.3.3 The responsible operator shows that measures are in place that manage hunting, fishing, trapping, ensnaring of rare and endangered species in areas of biomass/biofuel operations.

4.4 The use of exotic species are monitored and controlled. The risk of invasive species invading areas outside the operation site is minimized.

4.4.1 The responsible operator shows that no species identified as noxious or highly invasive or which is officially prohibited nationally will be used at the biofuel operation sites (e.g. using the CALWEED database or Global Invasive Species database)

4.4.2 The responsible operator shows that if invasive species are found, the management plan identifies measures to mitigate and control the invasion.

Principle 5: Soil

Soil quality is maintained or improved by minimizing erosion and promoting healthy biological systems and chemical and physical properties.

Responsible Operator: Feedstock Producer

5.1 An environmental management plan (part of Principle 2) is implemented that includes an impact assessment and practices that prevent or reverse soil degradation over the long term. Nutrient levels of soil or plants and soil are assessed and monitored. Erosion is avoided and field travel zones are limited.

5.1.1 The environmental management plan shall include practices to maintain and improve nutrient levels, soil pH, soil organic matter, soil biodiversity, avoid compaction and prevent salinization of the soil. The responsible operator assesses and monitors nutrient levels of the soil to improve soil health and uses soil maps where available.

5.1.2 The responsible operator shows that practices/techniques to reduce or avoid erosion are understood and in place (e.g. organic direct planting, permanent soil cover, crop rotation, terracing, etc.)

5.1.3 The responsible operator shows that the use of agricultural and forestry residues are not used at the expense of improved soil health and soil productivity.

5.1.4 None of the chemicals recorded in the World Health Organization's (WHO) 1a, 1b, or 2 lists should be used.

5.1.5 The responsible operator shows compliance with local laws and regulations with respect to waste storage and handling.

Principle 6: Water

Water quality and quantity of surface and groundwater shall be maintained or improved while respecting water rights.

Responsible Operator: Feedstock Producer, Feedstock Processor, Biofuel Producer

6.1 An environmental management plan (part of Principle 2) shall be developed and implemented that includes an assessment of the potential impacts on water quality and quantity from biomass/biofuel operations.

6.1.1 Water used for biomass/biofuel production shall not be withdrawn beyond replenishment capacity of the water table.

6.1.2 The responsible operator shall provide evidence that the water management plan identifies any negative impacts resulting from biomass/biofuel operations on water resources and that they are mitigated.

6.1.3 Irrigation is carried out responsibly and according to best management practices (BMPs) or legislation.

6.1.4 In drought-prone areas, irrigation shall not be used unless evidence is shown that water used for biomass/biofuel operations does not deplete the natural water table levels.

6.1.5 The responsible operator shall provide evidence that BMPs are applied that reduce water use and maintain and improve water quality (recycling, waste storage handling, waste discharge, fertilizer use).

6.1.6 The responsible operator shall perform an annual review of the management plan and report on its effectiveness.

6.1.7 The responsible operator shows compliance with local laws and regulations with respect to waste storage and handling.

6.2 Both formal and customary water rights are respected.

6.2.1 The water management plan shall assess whether biofuel operations negatively affect the water supply of the local communities and ecosystems that rely on that water and identify any mitigation measures.

6.3 Pursuant to Principle 1 (Legality), responsible operator shall obtain and comply with applicable water use and discharge permits from local, regional, state, and/or federal agencies.

Principle 7: Air

Air pollution from biofuel production shall be minimized.

Responsible Operators: Feedstock Producer, Feedstock Processor, Biofuel Producer

7.1 A good practices environmental management plan (part of Principle 2) is implemented that includes minimization of air pollution emissions.

7.1.1 The responsible operator shows that air pollutants released from the biomass/biofuel operations are identified and a mitigation plan is in place.

7.2 The responsible operator shows that open-air burning as part of land clearing or waste disposal is avoided.

7.2.1 National interpretation should identify any specific situations where such use of fire may be acceptable, for example through reference to ‘Guidelines for the implementation of the ASEAN policy on zero burning’, or comparable guidelines in other locations.

7.3 Pursuant to Principle 1 (Legality), responsible operator shall obtain and comply with applicable air pollution permits from local, regional, state, and/or federal agencies.