Columbia-Snake River Irrigators Association

IRRIGATION
BEST MANAGEMENT PRACTICES
FOR MAINSTEM COLUMBIA-SNAKE RIVER PUMPERS

Snake River Apple Orchards,
Ice Harbor Pool

Red Mt. Vineyards

Columbia-Snake River Irrigators Association
3030 W. Clearwater, Suite 205-A
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June 2005

Columbia-Snake River Irrigators Association

IRRIGATION
BEST MANAGEMENT PRACTICES
FOR MAINSTEM COLUMBIA-SNAKE RIVER PUMPERS

Overview:

The Columbia-Snake River Irrigators Association (CSRIA) formally supports the implementation of irrigation "best management practices" (BMPs), as part of an overall water management approach for the mainstem Snake-Columbia River system.

The CSRIA-sponsored BMP program is designed for irrigators and water right holders who are primarily "direct pumpers" from the mainstem Snake and Columbia rivers. Most of these irrigators independently hold state water rights, where the production agriculture irrigation systems are financed by private sector capital. Other direct pumpers are composed of small agricultural or more urban-based irrigators, holding independent river water rights, and representing a mix of private and public sector funding (municipal or special service district).

The program BMPs focus solely on irrigation water application and do not address other aspects of production agriculture or other attributes of commercial and residential land uses. The emphasis is on an adoption of high efficiency water use practices that meet the production and cost-effectiveness needs of large-scale commercial agriculture, and have applicability to smaller agricultural and residential circumstances.

While participation in the program is voluntary, individual CSRIA members, or others, may request CSRIA certification to document formally their adoption of the CSRIA-sponsored BMP program. The attached "Farm or Irrigation Site, Inspection Checklist" can be prepared by irrigators or water right holders for self-auditing, and a copy sent to the CSRIA for association review (if requested). For those requesting association review, an on-site evaluation of the inspection checklist will be made, with a subsequent notice of certification provided.

The CSRIA asserts that state (and federal) water resource managers and regulators should establish water use and water right policies that reward efficiency. Those irrigators and water right holders who adopt BMPs reflecting high levels of efficiency should be granted more flexibility in the use of existing water rights, and they should be eligible for receiving additional water rights, where the use of new water supplies creates negligible impacts to other environmental resources.

The BMPs for irrigation water management and operations are described below. These practices cover water diversion and distribution systems, application systems and technology, crop-related water management practices, new research, development, and demonstration projects, and some direct measures for wildlife and environmental resources enhancement.

Water right holders and irrigators are classified into three general sectors, with appropriate BMPs associated with each water user sector.

Center Pivot, Goose Gap

A. The BMP Sectors:

1. Large Acreage Agricultural Irrigation: Irrigators with more than 200 acres under irrigation (large-scale commercial agriculture).

2. Medium and Small Acreage Agricultural Irrigation: Small privately owned irrigation or some public sector entities (200 acres or less); includes public service districts, or state agencies, and irrigation water rights for a single, contiguous site.

3. Residential, Park, and Other Landscape Irrigation: Public sector entities providing irrigation for residential units, parks, playing fields, golf courses, colleges and schools, and other landscaping needs (no acreage limit).

B. Required Provisions for All Sectors:

All of the water user sectors shall implement fish screening and water measuring standards, as stated below:

1. Water diversion facilities are screened and consistent with the Washington Dept. of Fish and Wildlife standards, pursuant to RCW 77.16.220, RCW 77.55.040, and RCW 77.50.070. Existing screen configurations are consistent with mid-1990s standards; facilities are inspected and maintained annually. Any noncompliance issues will be rectified by demonstrating due diligence within a reasonable time period (5 years).

2. Source water diversions (pumping sites) are measured as described in the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-173 WAC. Water users shall collect or report monthly, or as required by rule, water use totals and monthly (or other) peak diversions to the Dept. of Ecology using one of the available electronic reporting methods. Measurement may be based on: 1) flow meter readings; 2) electric power (kWh) to acre-ft. engineering estimates; or 3) documented flow (gpm) and time calculations.

Center Pivot - Horse Heaven Hills

Center Pivot - Lower Snake River

C. Large Acreage Agricultural Irrigation Sector:

1. Pumping plants shall use multi-speed drives, high efficiency motors, or pump staging for specific system configurations, water storage facilities, or other management tools to calibrate actual water diversions with system demand.

2. Booster pumps shall employ multi-speed drives or other efficiency based engineering designs.

3. All pumping systems shall be checked on an annual basis to monitor any water use and efficiency changes, to detect any major system operational fluctuations.

4. Any noncompliance issues for measures 1-3 above will be rectified by demonstrating due diligence within a reasonable time period (five years).

Columbia River Irrigation Pump Stations

5. Main transmission/distribution systems shall be closed, pressurized systems, with conveyance losses less than 2%. All systems shall incorporate friction reducing components or energy efficiency engineering features. Any noncompliance issues will be rectified within a reasonable compliance period (five years), or the water right holder affirms to meeting full system compliance by the next technology change/retrofit cycle.

   Note: Where some systems may rely on open channel conveyance for main transmission systems, operational spills will be measured and shall not exceed 10% of the total diverted flows.

6. All conventional standards for crop water-use are met or exceeded (water use measured in annual inches of consumptive use by crop and micro climate), as established by the WSU crop water use irrigation guide (1991 edition and technical appendices, net irrigation use equal to guide standards).

7. Water use for soil fumigation, cover crops, and establishing soil moisture profiles shall be allowed in addition to direct crop uses identified by the Washington State irrigation guide. These uses shall not exceed 4-6 inches/acre annually.

   Cover crops are used to stabilize soil, control for wind erosion, and other ancillary purposes.

Center Pivot Low Pressure Nozzles, Lower Snake River

Table 1. Water Application Efficiencies

Irrigation Technology	Average Application Efficiency	BMPs Consumptive Use Efficiency*
Solid Set (above canopy)	70%	85%
Solid Set (below canopy or row crop)	75%	90%
Wheel-Line or Hand-Line (impact sprinkler)	75%	85%
Traveling Gun-Single Nozzle	65%	90%
Center Pivot (over-head impacts, >25 psi)	80%	85%
Center Pivot (drop tube <25 psi)	85%	90%
Micro-Sprinkler	85%	90%
Drip-Precision Irrigation	88%	95%

Source: Technical Memorandum from Benton County/Franklin County Water Conservancy Boards to WADOE, "Determining Irrigation Efficiency and Consumptive Use," Dated December 10, 2005, Kennewick, WA, with Sources, Citations, and Attachments Therein.

* Represents application efficiency acknowledged by CSRIA for BMPs.

8. On-site/farm application efficiencies—based on specific irrigation technologies--shall not be less than the efficiencies shown in Table 1. Table 1 efficiencies do not apply to water applications designed for tree fruit cooling or frost control measures.

9. All irrigation application systems shall be inspected--and receive needed maintenance--at least on a monthly basis to ensure proper operation.

10. Soil moisture sensors and probes (and/or other remote sensing technologies) shall be employed for monitoring water needs. These data shall be reviewed jointly with real-time weather forecast data to establish daily, and near-term, irrigation schedules. Any noncompliance issues will be rectified within three years.

11. By 2015, drip irrigation and precision irrigation systems shall be introduced where crop types and technology allow.

12. For tree fruit and some vineyard crops, cover crops (or other equivalent practices) shall be allowed to reduce soil erosion or assist temperature cooling.

13. For row or field crops, cover cropping shall be allowed, and included within all water use estimates, for soil retention and conservation purposes.

14. For all crops, cultivation practices shall be allowed to enhance water infiltration and eliminate soil erosion.

15. Water management shall be used to reduce chemical and fertilizer application rates per acre; and shall be a component of integrated pest management regimes (where applicable and cost-effective) to improve the effectiveness of biological controls and reduce pest habitats.

16. Water Right holders are encouraged to introduce and experiment with variable rate irrigation practices--acre-to-acre systems--and new forms of precision application and emitter controls. Implementation of such practices shall be documented (on farm irrigation site checklist).

17. Water Right holders are encouraged to introduce and experiment with computer monitoring of irrigation systems for both efficiency and performance measures. Implementation of such practices shall be documented (on farm irrigation site checklist).

Micro Sprinkler, Badger Canyon

Micro Sprinkler, Lower Snake River

18. Water right holders are encouraged to introduce sub-surface drip application systems for broad commercial applications, for some crops.

19. Water right holders are encouraged to introduce, experiment with, and document the effectiveness of, new soil conditioning products ("soil soap" or "wet soil" products); commercial applicability will be determined based on project monitoring, performance, and cost-effectiveness.

20. Water right holders are encouraged to develop wildlife habitat and refuge areas, where cost-effective. All such habitat and refuge areas shall be documented by the water right holder.

Flow Meters, Red Mt.

Center Pivot Control Panel, Lower Snake River

D. Medium and Small Acreage Agricultural Irrigation Sector:

1. Main transmission/distribution systems are closed, pressurized systems, with conveyance losses less than 2%.

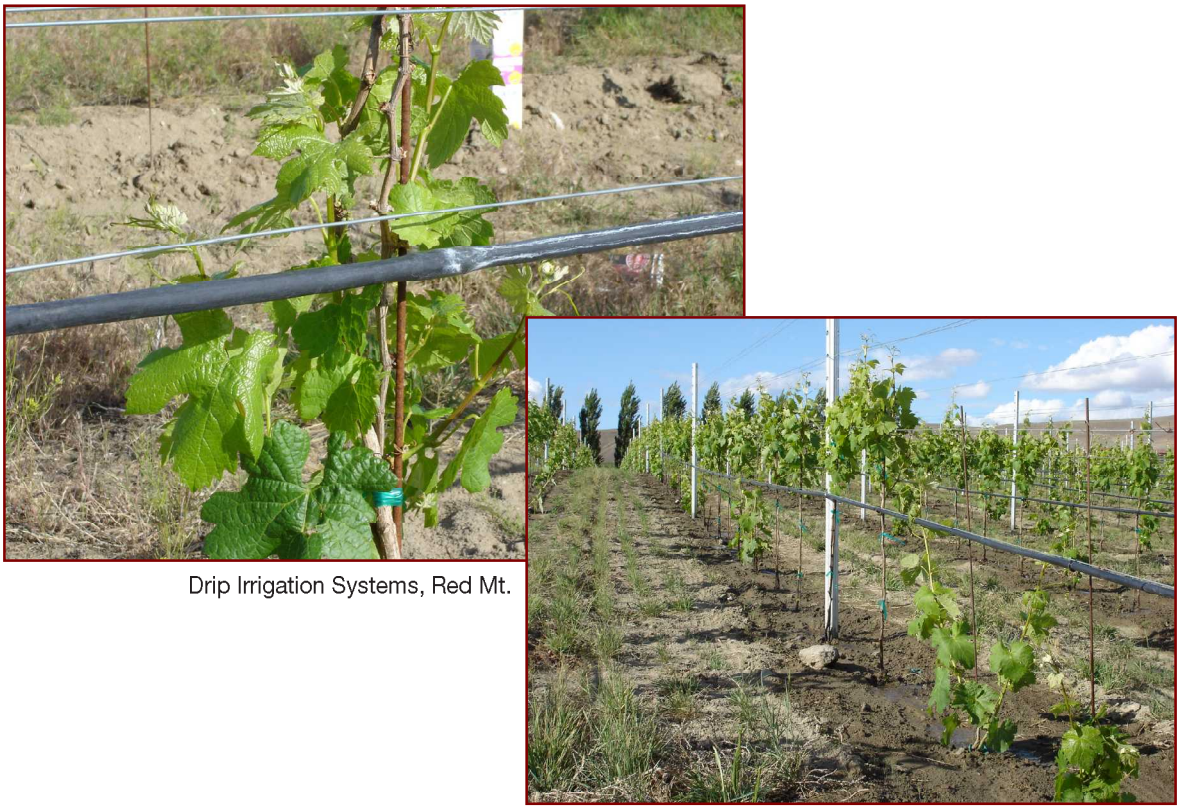
   Note: Where some systems may rely on open channel conveyance for main transmission systems, operational spills will be measured and shall not exceed 10% of the total diverted flows.

2. All conventional standards for crop water-use are met or exceeded (water use measured in annual inches of consumptive use by crop and micro climate), as established by the WSU crop water use irrigation guide (1991 edition and technical appendices, net irrigation use equal to guide standards).

3. On-site/farm application efficiencies—based on specific irrigation technologies--shall not be less than the efficiencies shown in Table 1. Table 1 efficiencies do not apply to water applications designed for tree fruit cooling or frost control measures.

4. All irrigation application systems shall be inspected--and receive needed maintenance--at least on a monthly basis to ensure proper operation.

5. Use of irrigation scheduling shall be applied to irrigation water based on turf/crop consumptive demand, with water schedules updated monthly.



Drip Irrigation Systems, Red Mt.

E. Residential, Park, and Other Landscape Irrigation.

1. Main transmission/distribution systems are closed, pressurized systems, with conveyance losses less than 10%. Not all municipal water systems use separate secondary water sources/lines for irrigation, using municipal water mainlines and distribution systems for both potable and irrigation demands.

   Note: Where some systems may rely on open channel conveyance for main transmission systems, operational spills will be measured and shall not exceed 15% of the total diverted flows.

2. All new mainline transmission and distribution systems shall be closed pipe systems, with conveyance losses not to exceed 10%.

3. Flow meters shall be installed at strategic points within distribution systems, with water quantity and peak-use data recorded on a monthly basis.

4. All conventional standards for crop water-use are met or exceeded (water use measured in annual inches of consumptive use by crop and micro climate), as established by the WSU crop water use irrigation guide (1991 edition and technical appendices, net irrigation use equal to guide standards).

5. On-site application efficiencies—based on specific irrigation technologies, shall not be less than the efficiencies shown in Table 1.

6. All irrigation application systems shall be inspected--and receive needed maintenance--at least on a monthly basis to ensure proper operation.

7. For contiguous areas greater than 20 acres (large parks, recreation areas, multiplex ball fields), soil moisture monitoring and/or irrigation scheduling shall be implemented, consistent with the primary uses of the irrigated area. Contiguous areas do not include individually owned residences within developments.

8. At the beginning of and during each irrigation season, the water supplier will distribute (or publish in a readily available source) water efficiency information to residential irrigation customers.

Landscape and Turf Irrometer, Badger Mt.

Irrigation/Rain Gauge, Lower Snake River

APPLICATION FOR CSRIA CERTIFICATION:
IRRIGATION BEST MANAGEMENT PRACTICES
COLUMBIA-SNAKE RIVER SYSTEM

BMP Sector: Large Acreage Agricultural Irrigation

1. Applicant Information

APPLICANT/BUSINESS NAME	PHONE NO.	FAX NO.
ADDRESS		
CITY	STATE	ZIP CODE

CONTACT NAME (IF DIFFERENT FROM ABOVE)	PHONE NO.	FAX NO.
ADDRESS		
CITY	STATE	ZIP CODE

2. Water Right Information

Please list the water right number for all water rights pertaining to this application and associated checklist. Use and affix additional pages as necessary.

WATER RIGHT NUMBER	RECORDED NAME(S)
WATER RIGHT NUMBER	RECORDED NAME(S)
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WATER RIGHT NUMBER	RECORDED NAME(S)

FOR OFFICE USE ONLY	
Date Received _____	By _____

IRRIGATION BEST MANAGEMENT PRACTICES

FARM OR IRRIGATION SITE INSPECTION AND CERTIFICATION CHECKLIST

All answers within the *Required Components* section must be **Yes or NA** for the CSRIA and/or participating conservation district to certify implementation of the BMP's. If all answers within the *Required Components* section are Yes or NA, the CSRIA and/or conservation district **must** certify implementation. If any answer within the *Required Components* section is No, the CSRIA and/or conservation district **cannot** certify implementation of the BMP's.

If certification is denied, the CSRIA and/or conservation district must explain the changes required to obtain certification. The explanation must be in writing, and it must be delivered to the applicant within 90 days of the date the checklist was received by CSRIA and/or conservation district.

BMP Sector: Large Acreage Agricultural Irrigation

Grower or Farm Name: _____

A.) REQUIRED COMPONENTS

❑ Yes ❑ No ❑ NA	1). Are water diversion facilities screened consistent with Washington Dept. of Fish and Wildlife (WDFW) standards, pursuant to RCW 77.55.040 and 77.55.320, and WAC 220-110-190? Are the facilities inspected and maintained annually?
❑ Yes ❑ No ❑ NA	2). Are water diversions metered and data collected as described in the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-173 WAC?
❑ Yes ❑ No ❑ NA	3). Do pumping plants use multi-speed drives, high efficiency motors, or pump staging for specific configurations, water storage facilities, or other management tools to calibrate actual water diversions with system demand?
❑ Yes ❑ No ❑ NA	4). Do booster pumps employ multi-speed drives or other efficiency based engineering designs?
❑ Yes ❑ No ❑ NA	5). Are pumping systems checked on an annual basis to monitor any water use and efficiency changes, to detect any major system operational fluctuations?
❑ Yes ❑ No ❑ NA	6). Will any noncompliance issues for measures 3-4 above be rectified by demonstrating due diligence within a reasonable time period (five years)?
❑ Yes ❑ No ❑ NA	7). Are all main transmission/distribution systems closed, pressurized systems, with conveyance losses less than 2%? Do all systems incorporate friction reducing components or energy efficiency engineering features? Will any noncompliance issues will be rectified within a reasonable compliance period (five years), or will the water right holder affirm to meeting full system compliance by the next technology change/retrofit cycle.
❑ Yes ❑ No ❑ NA	8). If a system relies on open channel conveyance for a main transmission system, are operational spills measured, and are they less than 10% of the total diverted flows?

❑ Yes ❑ No ❑ NA	9). Are all conventional standards for crop water-use met or exceeded (net water use measured in annual inches of consumptive use and evapotranspiration, by crop and by micro-climate area), as established by the WA State Irrigation Guide (USDA-NRCS and WSU, 1991 edition and technical appendices)?
A.) REQUIRED COMPONENTS CONT…	
❑ Yes ❑ No ❑ NA	10). Is the amount of water used for soil fumigation, cover crops, and establishing soil moisture profiles less than 4-6inches per acre annually? This amount is allowed in addition to direct crop uses identified by the WA State Irrigation Guide.
❑ Yes ❑ No ❑ NA	11). Are on-site/farm application efficiencies, based on specific irrigation technologies, equal to or greater than the efficiencies shown in Table 1? (Efficiencies do not apply for tree fruit cooling or frost control measures)
❑ Yes ❑ No ❑ NA	12). Are all irrigation application systems inspected and receive needed maintenance at least once a month to ensure proper operation?
❑ Yes ❑ No ❑ NA	13). Are soil moisture sensors and probes (and/or other remote sensing technologies) employed for monitoring water needs? Is the data reviewed jointly with real-time weather forecast data to establish daily, and near-term, irrigation schedules? Will any noncompliance issues be rectified within three years?
B.) ENCOURAGED COMPONENTS (When cost-effective and applicable)	
❑ Yes ❑ No ❑ NA	1). Has drip irrigation or precision irrigation systems been introduced where crop types and technology allow? Year installed_____.
❑ Yes ❑ No ❑ NA	2). Is water management used to reduce chemical and fertilizer application rates per acre or is it a component of integrated pest management to improve the effectiveness of biological controls and reduce pest habitats?
❑ Yes ❑ No ❑ NA	3). Have underground drip application systems been introduced for broad commercial applications?
❑ Yes ❑ No ❑ NA	4). Has wildlife habitat and refuge areas been developed and documented by the water right holder? Please specify within ¼ section: _____.
C.) NEW TECHNOLOGY DEMOSTRATIONS OR EXPERIMENTS	
❑ Yes ❑ No ❑ NA	1). Has the water right holder introduced or experimented with variable rate irrigation practices – acre-to-acre systems – and new forms of precision application and emitter controls?
❑ Yes ❑ No ❑ NA	2). Has the water right holder introduce, experimented with, and documented the use of computer monitoring of irrigation systems for both efficiency and performance measures?
❑ Yes ❑ No ❑ NA	3). Has the water right holder introduced, experimented with, and documented the effectiveness of new soil conditioning products?
D.) ADDITIONAL BEST MANAGEMENT PRACTICES	
❑ Yes ❑ No ❑ NA	1). For tree fruit and some vineyard crops, are cover crops or other equivalent practices implemented to reduce soil erosion or induce cooling?
❑ Yes ❑ No ❑ NA	2). For row or field crops, are cover crops used for soil retention and erosion? (Remember to include water use by cover crops in total water use estimates).
❑ Yes ❑ No ❑ NA	3). Are cultivation practices on all crops used to enhance water infiltration and eliminate soil erosion?

Table 1

Irrigation Technology	Average Application Efficiency	BMPs Consumptive Use Efficiency
Solid Set (above canopy)	70%	85%
Solid Set (below canopy or row crop)	75%	90%
Wheel-Line or Hand-Line (impact sprinkler)	75%	85%
Traveling Gun-Single Nozzle	65%	90%
Center Pivot (over-head impacts, >25 psi)	80%	85%
Center Pivot (drop tube <25 psi)	85%	90%
Micro-Sprinkler	85%	90%
Drip-Precision Irrigation	88%	95%

A Farm or Irrigation Site Inspection and Certification Checklist for implementation of Irrigation Best Management Practices for Mainstem Columbia-Snake River Pumpers was submitted for certification by _____ on _____.

The checklist was certified not certified on _____ by the CSRIA and/or Board of Supervisors of the _____ Conservation District.

CSRIA and / or Conservation District: implementation certification

The CSRIA and/or _____ Conservation District certifies that _____ _____, has constructed or otherwise put in place the elements necessary to implement this Irrigation BMP checklist.

_____ _____

CSRIA and/or Conservation District Authorized Representative **Date**

Irrigator: management certification

I, _____, declare that the Irrigation BMP's identified in the checklist are being implemented on the acreage identified on the attached map (all within ¼ section(s).

_____ _____

Grower name or farm representative **Date**

APPLICATION FOR CSRIA CERTIFICATION:
IRRIGATION BEST MANAGEMENT PRACTICES
COLUMBIA-SNAKE RIVER SYSTEM

BMP Sector: Medium and Small Agricultural Irrigation

1. Applicant Information

APPLICANT/BUSINESS NAME	PHONE NO.	FAX NO.
ADDRESS		
CITY	STATE	ZIP CODE

CONTACT NAME (IF DIFFERENT FROM ABOVE)	PHONE NO.	FAX NO.
ADDRESS		
CITY	STATE	ZIP CODE

2. Water Right Information

Please list the water right number for all water rights pertaining to this application and associated checklist. Use and affix additional pages as necessary.

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IRRIGATION BEST MANAGEMENT PRACTICES

FARM OR IRRIGATION SITE INSPECTION AND CERTIFICATION CHECKLIST

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BMP Sector: Medium and Small Agricultural Irrigation

Grower or Farm Name: _____

A.) REQUIRED COMPONENTS

❑ Yes ❑ No ❑ NA	1). 1Are water diversion facilities screened consistent with the Washington Dept. of Fish and Wildlife (WDFW) standards, pursuant to RCW 77.55.040 and 77.55.320, and WAC 220-110-190? Are the facilities inspected and maintained annually?
❑ Yes ❑ No ❑ NA	2). Are water diversions metered and data collected as described in the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-173 WAC?
❑ Yes ❑ No ❑ NA	3). Are all main transmission/distribution systems closed, pressurized systems, with conveyance losses less than 10%?
❑ Yes ❑ No ❑ NA	4). If a system relies on open channel conveyance for a main transmission system, are operational spills measured and are they less than 10% of the total diverted flows?
❑ Yes ❑ No ❑ NA	5). Are all conventional standards for crop water-use met or exceeded (net water use measured in annual inches of consumptive use and evapotranspiration, by crop and by micro-climate area), as established by the WA State Irrigation Guide (USDA-NRCS and WSU, 1991 edition and technical appendices)?
❑ Yes ❑ No ❑ NA	6). Are on-site/farm application efficiencies, based on specific irrigation technologies, equal to or greater than the efficiencies shown in Table 1? (Efficiencies do not apply for tree fruit cooling or frost control measures)
❑ Yes ❑ No ❑ NA	7). Are all irrigation application systems inspected and receive needed maintenance at least once a month to ensure proper operation?
❑ Yes ❑ No ❑ NA	8). Is irrigation scheduling used and irrigation water applied based on turf/crop consumptive demand, with water schedules updated monthly?

Table 1

Irrigation Technology	Average Application Efficiency	BMPs Consumptive Use Efficiency
Solid Set (above canopy)	70%	85%
Solid Set (below canopy or row crop)	75%	90%
Wheel-Line or Hand-Line (impact sprinkler)	75%	85%
Traveling Gun-Single Nozzle	65%	90%
Center Pivot (over-head impacts, >25 psi)	80%	85%
Center Pivot (drop tube <25 psi)	85%	90%
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_____ _____

CSRIA and/or Conservation District Authorized Representative **Date**

Irrigator: management certification

I, _____, declare that the Irrigation BMP's identified in the checklist are being implemented on the acreage identified on the attached map (all within ¼ section(s).

_____ _____

Grower name or farm representative **Date**

APPLICATION FOR CSRIA CERTIFICATION:
IRRIGATION BEST MANAGEMENT PRACTICES
COLUMBIA-SNAKE RIVER SYSTEM

BMP Sector: Residential, Park, and Other Landscape Irrigation

1. Applicant Information

APPLICANT/BUSINESS NAME	PHONE NO.	FAX NO.
ADDRESS		
CITY	STATE	ZIP CODE

CONTACT NAME (IF DIFFERENT FROM ABOVE)	PHONE NO.	FAX NO.
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IRRIGATION BEST MANAGEMENT PRACTICES

FARM OR IRRIGATION SITE INSPECTION AND CERTIFICATION CHECKLIST

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BMP Sector: Residential, Park, and Other Landscape Irrigation

Irrigator or Entity Name: _____

A.) REQUIRED COMPONENTS

❑ Yes ❑ No ❑ NA	1). Are water diversion facilities screened consisten with the Washington Dept. of Fish and Wildlife (WDFW) standards, pursuant to RCW 77.55.040 and 77.55.320, and WAC 220-110-190? Are the facilities inspected and maintained annually?
❑ Yes ❑ No ❑ NA	2). Are water diversions metered and data collected as described in the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-173 WAC?
❑ Yes ❑ No ❑ NA	3). Are all main transmission/distribution systems closed, pressurized systems, with conveyance losses less than 10%?
❑ Yes ❑ No ❑ NA	4). If a system relies on open channel conveyance for a main transmission system, are operational spills measured and are they less than 15% of the total diverted flows?
❑ Yes ❑ No ❑ NA	5). Are all new mainline transmission and distribution systems closed pipe systems, with conveyance losses less than 10%?
❑ Yes ❑ No ❑ NA	6). Are flow meters installed at strategic points within the distribution systems, with water quantity and peak-use data recorded on a monthly basis?
❑ Yes ❑ No ❑ NA	7). Are all conventional standards for crop water-use met or exceeded (net water use measured in annual inches of consumptive use and evapotranspiration, by crop and by micro-climate area), as established by the WA State Irrigation Guide (USDA-NRCS and WSU, 1991 edition and technical appendices)?
❑ Yes ❑ No ❑ NA	8). Are on-site application efficiencies, based on specific irrigation technologies, equal to or greater than the efficiencies shown in Table 1?
❑ Yes ❑ No ❑ NA	9). Are all irrigation application systems inspected and receive needed maintenance at least once a month to ensure proper operation?

❑ Yes ❑ No ❑ NA	10). Is soil moisture monitoring and irrigation scheduling used on contiguous areas greater than 20 acres, consistent with primary use of the irrigation land practices?
❑ Yes ❑ No ❑ NA	11). Does the water supplier distribute water efficiency information to residential costumers at the beginning of each irrigation season?

Table 1

Irrigation Technology	Average Application Efficiency	BMPs Consumptive Use Efficiency
Solid Set (above canopy)	70%	85%
Solid Set (below canopy or row crop)	75%	90%
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Micro-Sprinkler	85%	90%
Drip-Precision Irrigation	88%	95%

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The checklist was certified not certified on _____ by the CSRIA and/or Board of Supervisors of the _____ Conservation District.

CSRIA and / or Conservation District: implementation certification

The CSRIA and/or _____ Conservation District certifies that _____ _____, has constructed or otherwise put in place the elements necessary to implement this Irrigation BMP checklist.

_____ _____

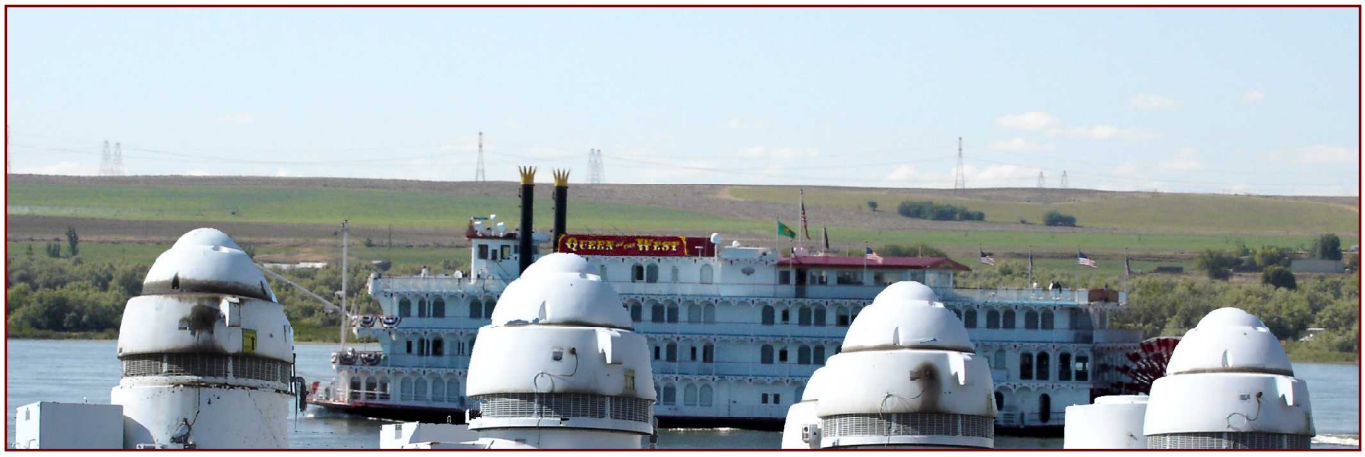
CSRIA and/or Conservation District Authorized Representative **Date**

Irrigator: management certification

I, _____, declare that the Irrigation BMP's identified in the checklist are being implemented on the acreage identified on the attached map (all within ¼ section(s).

_____ _____

Grower name or farm representative **Date**



Columbia River Pumps and Sternwheeler

Lower Snake River Irrigator