Definition:
A planned system to collect, store and transport irrigation tailwater for re-use.

Purposes:
• Conserve irrigation water supplies through capture and re-use of the water that runs off the field
• Improve off-site water quality

How Does This Practice Work?
Runoff from irrigated land is collected, conveyed, stored and reused. This system normally includes a combination of practices and equipment that collect, convey, store and recycle irrigation runoff water for re-use. Common components include pickup ditches, sumps, pits, pumps and pipelines. A sump or pit is always needed to store the tailwater until it is redistributed in the farm irrigation system. The pits may be small or large depending on the type of recycling pump and other components of the irrigation delivery system. All tailwater recovery systems require facilities of some kind to convey the tailwater from the storage pit to the point of reentry into the farm irrigation system. This may involve installing a pump and pipeline to return the water to the upper portion of the farm, or it may only consist of a gravity outlet to a ditch or pipeline to convey the water to a lower section of the farm irrigation system.

Where This Practice Applies and Its Limitations:
Tailwater recovery systems are suitable for use on lands and facilities that are served by a properly designed and installed irrigation system, where recoverable irrigation runoff flows can be anticipated under current or expected management practices.

Collection facilities.
Facilities for the collection of irrigation tailwater are an integral part of irrigation systems. These facilities may include, but are not limited to, ditches, culverts, pipelines, water control structures, land/or grade stabilization structures or other erosion control measures. These features collect and/or redirect the tailwater.

Storage facilities.
Facilities are needed to store the collected water until it is redistributed in the irrigation system. Runoff volume and rate, rate of use in the irrigation system, as well as the required level of...
water control at the point where
the tailwater is returned to the ir-
rigation system, should be consid-
ered in determining the size of the
storage facility.

Variable Flow
Tailwater System
For systems where tailwater cannot
be easily stored in a pit or res-
ervoir, a Variable Flow Tailwater
System may be used. This type of
system uses a small sump and a
pumping plant with facilities (i.e.,
float valve) to vary the flow rate
discharged back into the irrigation
system, matching the incoming
runoff.

Additional considerations
applicable to improving
water quality
Where additional storage is
required to provide adequate re-
tention time for the breakdown
of chemicals in the runoff waters,
storage facilities should be sized
accordingly. Allowable retention
times are site-specific to the par-
ticular chemical used. Additional
storage may be required to pro-
vide for sediment deposition.

Effectiveness:
Tailwater recovery systems are
extremely effective in the capture
and re-use of irrigation water and
may improve the system irrigation
efficiencies from 25 to 30 per-
cent. Tailwater recovery systems
also have a significant impact on
improving water quality through
trapping of sediments and the col-
collection and re-use of runoff waters
that contain nutrients and chemi-
cals. Sediments with attached
phosphorus or other nutrients and
chemicals are collected, contained
and may be recycled. The trapping
effectiveness depends on system
design and is directly related to re-
tention times. Tailwater recovery
systems can be highly effective in
improving off-site water quality.

Cost of Establishing and
Putting the Practice in Place:
In general, tailwater recovery
systems cost from $150 to $225
per acre. System cost includes
earth work, pipeline installation
and pump assembly. The cost of
a particular tailwater recovery
system can be estimated using the
following prices: $1.00 per cubic
yard of earth work (excavation
or earth fill) plus $5.00 per foot
for a 10-inch PVC high-pressure
pipeline installation. Add the
cost of pump and power source, if
needed, to the system cost. Your
local NRCS office can provide
better cost estimates.

Operation and Maintenance:
Periodic cleaning and re-grading
of collection facilities, removal
of debris from trash racks and
structures, removal of sediment
from traps and/or storage facili-
ties and routine maintenance of
all mechanical components will be
necessary.

References:
Broner, I. Tailwater Recovery for
Surface Irrigation, No. 4.709.
Colorado State University.

NRCS Website:
http://www.nrcs.usda.gov/

NRCS Engineering Field Manual.

NRCS local field office technical
gov/technical/efotg

NRCS National Conservation
Practices Standard (447).
http://www.nrcs.usda.gov/tech-
nical/efotg

NRCS National Irrigation Guide,
Part 652.

For Further Information:
Contact your local conserva-
tion district, USDA-NRCS or
Cooperative Extension Service of-
ice. Cost share may be available.
Contact your local offices.

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