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August 16, 1999

Robert L. Morgan, PE, State Engineer
Utah Division of Water Rights
1594 West North Temple, STE 220
PO Box 146300
Salt: Lake City, UT 84114-6300 HAND DELIVERED

Re: Proposal for restricted pumping in the southwestern Jordan Valley area

Dear Mr. Morgan:

Kennecott Utah Copper Corporation herein submits a request for the creation of a restricted pumping zone in certain parts of the former Management Area 8 of the interim Salt Lake Valley Ground Water Management Plan. The proposed restricted area overlies contaminated groundwater in the principal aquifer of the southwestern Jordan Valley, as documented in the enclosed Remedial Investigation and Feasibility Study done under CERCLA and State review (CD-ROM attached).

As part of its responsibilities under CERCLA and the Natural Resource Damage settlement with the State, Kennecott has completed source controls at its facilities to prevent further degradation of groundwater in the basin. Kennecott also has in place an extraction well for acidic water in the groundwater plume, two extraction wells at the leading edge of an elevated sulfate plume in the Bingham Creek area, and an extraction well at the leading edge of sulfate-contaminated water near Lark. Kennecott is currently conducting a joint study with the Jordan Valley Water Conservancy District of the feasibility of extracting and treating elevated sulfate groundwater and providing the treated water for municipal use.

Part of any effective remediation plan must include measures to protect groundwater users and prevent further migration of existing contamination. Although much of the affected aquifer is on Kennecott property (where Kennecott can control groundwater development), Kennecott is particularly concerned about future groundwater development along the outskirts of South Jordan and West Jordan cities, and in the Town of Herriman. Privately owned water rights exist in those areas, and the communities may require diversion of external water rights to the areas as part of development requirements. Unrestricted use of these water rights could draw elevated sulfate and TDS water into the currently clean aquifer, causing damage to the water users and exacerbating groundwater contamination.

Kennecott would like to propose a series of restrictions on future water well development in these areas. These restrictions would include:

1. Completion depth and pumping rate restrictions on wells drilled within 3000 feet south of the known 250-mg/L-sulfate isoconcentration line in the Herriman area, as shown on Figure 4-4 of the RI.
2. Completion depth and pumping rate restrictions on wells drilled within 3000 feet north of the known 250-mg/L-sulfate isoconcentration line in the West Jordan area, as shown on the same figure.

3. Prohibition of new well development within the 250-mg/L-sulfate isoconcentration line in the former Kennecott evaporation pond area (South Jordan) until Kennecott installs its NRD remediation and water supply and treatment systems, achieves hydraulic containment of the upgradient ground water plume, and the system reaches steady state and achieves a sulfate level in the area below 250 mg/L.

Appropriate completion depths and pumping rates would be determined on a case-by-base basis using the most up-to-date information on location and depth of contamination, aquifer properties, and user needs. Kennecott would supply this information to the State Engineer and any water user upon request. The restricted area will shrink as remediation and natural attenuation reduce the size of the contaminated zone.

Kennecott recognizes that these restrictions may adversely affect the water rights of private water users in these areas. Kennecott stands ready to assist affected property owners in obtaining an adequate water supply by identifying alternative water sources, providing technical assistance in siting and completing supply wells, and providing supplemental financing in cases where the presence of contamination causes an additional cost burden to the property owner.

Please contact me at 569-7015 if you have any questions. We would like to meet with you and your staff to discuss this matter at a suitable time.

Sincerely,

Jonathan F. Callender, Ph.D
Manager Strategic Resources

Cc: W.R. Williams, General Manager, KUCC
M. Shoop, Associate General Counsel, KUCC
Dallin Jensen, Parsons, Behle & Latimer

Enc. Figure 4-4, RI/FS



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

Michael O. Leavitt
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June 25, 2002

Salt Lake Valley Groundwater Users:

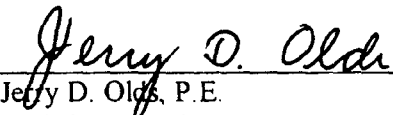
Enclosed is the final Salt Lake Valley Groundwater Management Plan which replaces the interim plan implemented in 1991. Although we are implementing this management plan on a "permanent" rather than on an interim basis, we are allowing for the prospect of modifying this plan in the future as conditions change. Modification to this management plan would occur in consultation with water users and other interested parties.

We have received numerous comments and a lot of input during the development of this plan. We would like to thank all of those who have contributed to this process. Many of the provisions in this plan reflect the concerns and issues raised by many of you.

In addition, we have relied heavily on data, information, and computer models which were developed by the United States Geological Survey. The publications containing much of this data and information and other related documents are available on the division's website - waterrights.utah.gov.

The water rights configuration in Salt Lake Valley is complex and offers many unique challenges for both water users and water managers. We believe that this management plan adequately addresses these challenges. We also believe that this will be a useful tool in helping water users plan for future development as well as help this division in the administration and management of this precious resource. We ask for your continued support.

Sincerely,



Jerry D. Olds, P.E.
Utah State Engineer

Utah!
Where ideas connect

Introduction

This document presents the state engineer's policy for the management of the ground-water resources of Salt Lake Valley. The objectives of this ground-water management plan are to promote wise use of the ground-water resource, to protect existing water rights, and to address water quality issues and over-appropriation of ground water in the valley. In implementing this ground-water management plan, the state engineer is using his statutory authority to administer the measurement, appropriation, and distribution of the ground water of Salt Lake Valley. The intent of this plan is to provide specific management guidelines under the broader statutory provisions within Title 73 of the Utah Code.

For the purposes of this plan, the Salt Lake Valley consists of the unconsolidated basin-fill material generally bounded by the Wasatch Range to the east, Oquirrh Range to the west, Great Salt Lake to the north, and Traverse Mountains to the south. This area is shown in Figure 1.

Salt Lake Valley Ground-Water Management Plan

The following policy guidelines are hereby implemented effective June 25, 2002:

1.0 Appropriations

The Salt Lake Valley is closed to new appropriations of ground water from the principal aquifer including fixed-time appropriations. This action is necessary because of the over-appropriation of water resources of the valley. All pending unapproved applications in the principal aquifer will be rejected. In addition, the state engineer will hold all applications to appropriate water from the shallow aquifer until further review and study of this source is conducted.

2.0 Ground-Water Withdrawal Limits

In order to fulfill the objectives of this management plan, guidelines are being implemented to help distribute ground-water withdrawals. If excessive withdrawals occur, the state engineer will distribute the water in accordance with the priority dates of the applicable water rights using the following guidelines:

2.1 Safe Yield from the Principal Aquifer

Salt Lake Valley has been divided into four regions: western, eastern, central, and northern as shown in Figure 1. The state engineer may limit the quantity of water withdrawn in these regions so that the average amount of water withdrawn over the long term does not exceed the safe yield. The safe yield of each region has been estimated and is shown in Table 1 below.

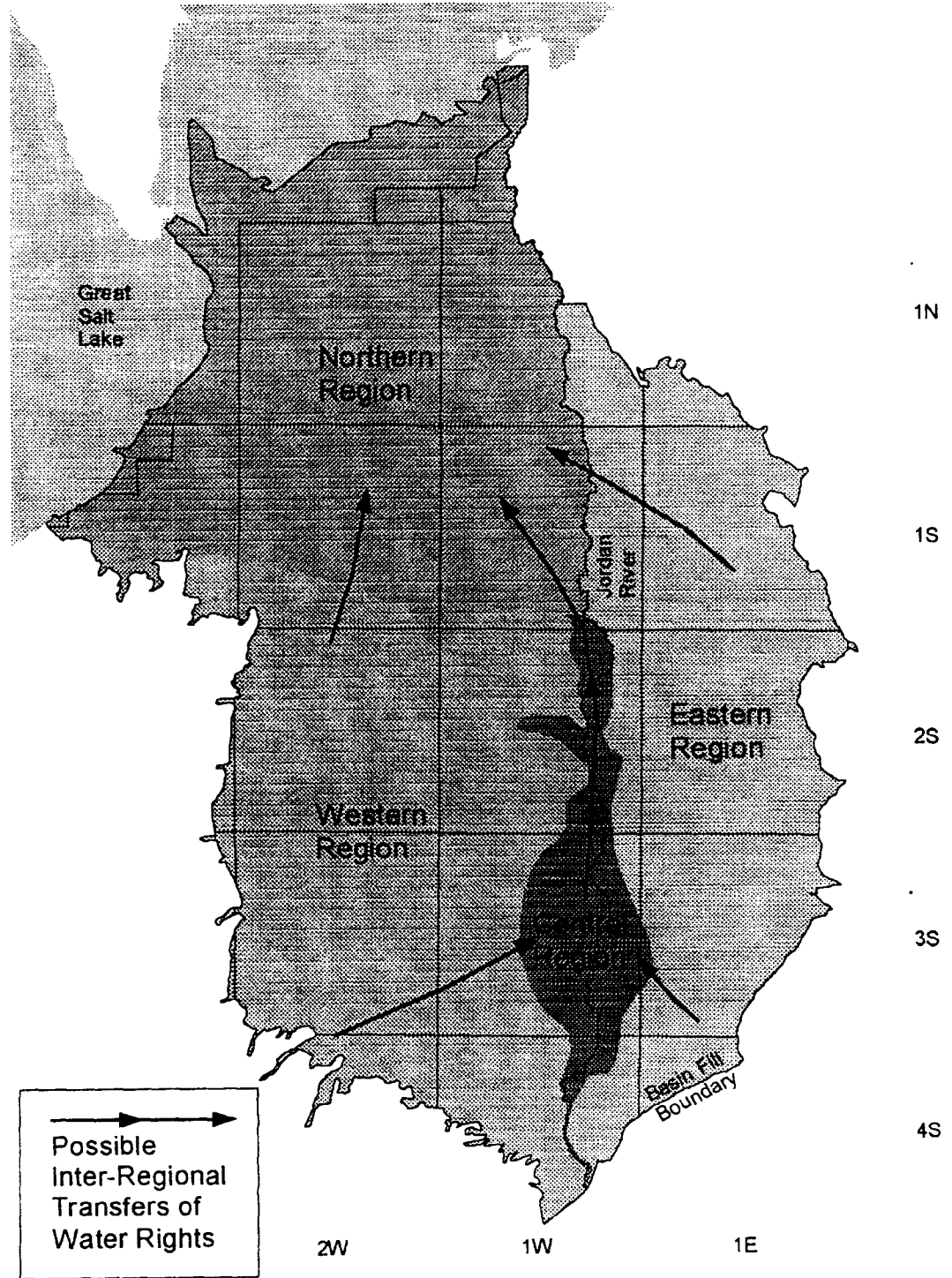


Figure 1. Salt Lake Valley Ground-Water Management Plan Regions

Table 1. Regional Safe Yields

Region	Safe Yield (acre-feet per year)
Western	25,000
Eastern	90,000
Central	20,000
Northern	30,000

2.2 Localized Ground-Water Withdrawals

The state engineer may limit withdrawals in any area of the valley where excessive withdrawals are causing definite and significant harm to the ground-water system. The state engineer recognizes that there are many different factors to consider in determining when and where this is occurring. Some of the relevant factors to consider are:

- ground-water level trends
- trends in the amount of ground-water withdrawals
- changes in water quality
- recent climatic conditions
- local hydro-geologic conditions

Upon identifying areas where excessive withdrawals are causing harm to the aquifer and after public review and commentary on applicable data, the state engineer may limit the withdrawals in that area according to the priority dates of each applicable water right and in harmony with all applicable state statutes. The total quantity of ground water restricted from withdrawal will correspond to at least the quantity necessary to preclude further harm to the aquifer system. Further pumping restrictions may be imposed if harm to the ground-water system worsens. Pumping restrictions may also be lifted in part or in whole after the ground-water system has recovered to an acceptable level, provided no future reoccurrences of the conditions which caused the harm are anticipated.

2.3 Ground-Water Withdrawals From the Southwestern Portion of the Valley

A portion of the aquifer in the Southwestern part of the valley is being remediated by the removal of contamination associated with past mining practices. As part of the remediation effort, Kennecott Utah Copper Corporation (KUCC) has committed to assist affected water users obtain adequate replacement water if adversely affected. Applications in this area which propose to change the point of diversion or drill a replacement well will be critically reviewed so as not to interfere with the remediation process. In conjunction with this, KUCC has committed to work with applicants to determine if there is a feasible well location, depth, and pumping rate for future wells in the contaminated area. The contaminated area is defined as extending 3000 feet from the known 250 mg/l sulfate isoconcentration contour. The approximate boundary for this area is shown in Figure 2.

3.0 Applications to Change the Point of Diversion, Place of Use, and/or Purpose of Use

Each change application will be evaluated based upon its own merits. Within the statutory requirements, the evaluation may consider - but will not necessarily be limited to - potential impacts on: existing water rights, the ground-water system, and overall water quality. In addition, the following guidelines will be used when evaluating change applications:

- 1) Change applications that propose to transfer water rights historically supplied from the shallow aquifer to the principal aquifer will not be approved.
- 2) Change applications that propose to transfer water rights into the eastern region, into the western region, or out of the northern region will not be approved. (See Figure 1.)
- 3) Change applications that propose to transfer water rights into a restricted area¹ will not be approved. (See Figure 2 and endnotes for details.)
- 4) Change applications that propose to transfer water rights into a section where the Transfer Index Number (TIN²) under the current water rights exceed the limits set forth in Table 2 below will only be considered if the applicant can show that:
 - a) There is sufficient reason to believe that existing water rights will not be impaired.
 - b) Compensation and/or adequate replacement water will be provided to existing water right holders if impairment occurs.
 - c) Additional ground-water withdrawals will not significantly reduce water levels, degrade the water quality, or otherwise negatively impact the ground-water system.

Region	TIN Limits (acre-feet per year)
Western	4,000
Eastern	12,000
Central	6,000
Northern	6,000

- 5) Change applications that propose to transfer water rights between sections that have Transfer Index Numbers exceeding the limits set forth in Table 2 may be approved provided that the TIN in the hereafter section is at most 75% of the TIN of the heretofore section and the criteria listed under items 1-4 above have been met.
- 6) Change applications that propose to drill a replacement well within a distance of 2,640 feet from the original point of diversion may be approved provided that the criteria listed under items I and 3, above, have been met.

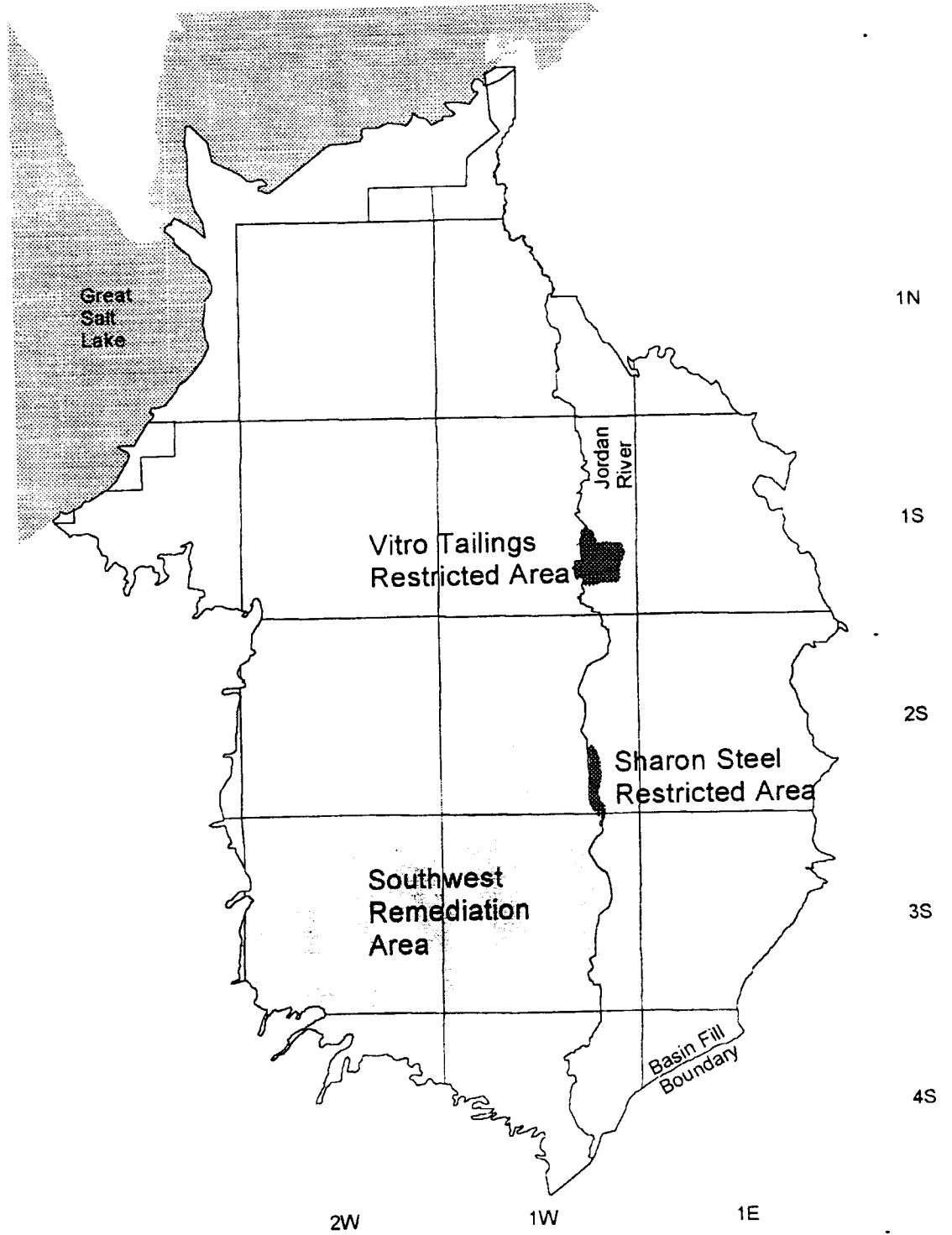


Figure 2. Salt Lake Valley Restricted Areas and Southwest Remediation Area

4.0 Well Spacing

Each new well should be designed, constructed, and operated so that, when pumped at its maximum flow rate, it will not cause more than 12 feet of draw down on an existing well unless the owner of the new well provides just compensation to the affected well owner(s).

5.0 Extensions of Time for Water Right Applications

The state engineer will critically review all future extension requests on approved applications to appropriate or change water pursuant to Section 73-3-12 of the Utah Code. When reviewing extension requests, if unjustified delays or a lack of due diligence is found, the state engineer may reduce the priority date, grant the request in part, or deny the extension of time request.

6.0 Ground-Water Remediation Projects

The state engineer will evaluate each proposed ground-water remediation project based upon its own merits. In order to allow for remediation of ground water the state engineer may support withdrawal amounts in excess of the regional safe yield values outlined in Section 2.1 above or allow changes that would exceed the limits set forth in Section 3.0 above if it is determined to be in the best interest of the public and has a specific project life.

7.0 Aquifer Storage Recovery (ASR)

The state engineer will evaluate each proposed ASR project based upon its own merits. In general, withdrawals credited from aquifer recharge will not count towards the safe yield values outlined in Section 2.1 above. Some of the factors that will be considered in the evaluation of potential ASR projects are:

- hydro-geologic properties of the aquifer
- ground-water velocities
- amount of time between recharge and recovery
- potential effect on other water rights

Applicants may be required to monitor the effects of ASR projects to ensure that no unreasonable impact to the ground-water system or other water rights occurs.

8.0 Monitoring Activities and Aquifer Status Update

The Division of Water Rights will monitor water quality reports submitted by water users to the Department of Environmental Quality and periodically produce an updated, valley-wide water quality summary. Additionally, the division will provide water use information. Also, the division will review new pertinent data that further, or more accurately, defines the ground-water flow system and hydro-geology of Salt Lake Valley and will modify the plan if necessary. Any modifications to the plan will occur in consultation with water users and other interested parties.

June 25, 2002
Date

Jerry D. Olds
Jerry D. Olds, P.E.
Utah State Engineer

Endnotes

1. Restricted Areas

There are two restricted areas currently in the plan associated with the following contaminated sites as shown in Figure 2:

- Vitro Tailings Site
- Sharon Steel Site

In order to protect the quality of the water by preventing changes in the hydraulic gradient and mobilization of contaminants at these contaminated sites, the transfer of water rights into these areas will not be allowed. Restricted areas are based on available data and may change as new data is obtained. New restricted areas may be added to the plan upon request to the state engineer if an evaluation of the data supports such designation, and the public has had an opportunity to review the data and comment on the proposed designation.

2. Transfer Index Number (TIN)

Under the U.S. Public Land Survey system, the land is divided into township, range, and section. Each section is a square measuring approximately one mile on each side. In this management plan, each section in the valley fill of the Salt Lake Valley is assigned a Transfer Index Number which is based on the index values of every water use within that and each of the eight adjacent sections.

There are specific rules for calculating a section's TIN, which has units of acre-feet per year. A TIN may change over time as the water rights situation changes. The primary rules for calculating a section's TIN are outlined below.

1. Only approved and perfected, i.e. certificated, water rights are evaluated. Approved (but unperfected) changes on perfected water rights are not evaluated because of double accounting issues. Water rights under active litigation are not evaluated.
2. Only wells (both flowing and pumped) are evaluated. Tunnels, springs, drains, and other types of non-well, "underground" diversions are not evaluated.
3. Index values for indoor domestic uses are calculated at 0.45 acre-feet per family.
4. Index values for stock-watering uses are calculated at 0.028 acre-feet per equivalent livestock unit (ELU).
5. Index values for irrigation uses are calculated at 5 acre-feet per acre of irrigated land. If there is a sole supply acreage listed, the irrigation index value is equal to the number of sole supply acres multiplied by an irrigation duty of 5.
6. Index values for domestic, stock-watering, and irrigation uses are calculated by dividing the index value of a claims group by the number of supplemental rights in that group.
7. Index values for municipal uses are calculated by multiplying the flow rate (cfs) by 362.
8. Index values for industrial, mining, and other uses are calculated by multiplying the flow rate (cfs) by 181.

9. The total index value for a water right is the sum of the index values of all listed uses but will not exceed the maximum diversion volume (if listed on the right) nor the maximum flow rate (cfs) multiplied by 724.
10. The total index value for a particular water right is divided evenly between each point of diversion listed under that water right.
11. Index values are calculated for each point of diversion in a section and summed up for the section in question and every adjacent section. This has been done for section 11 in the example below. (Note: The TIN for section 11 is not 500.)

3 800	2 1600	1 2100
10 2600	11 500	12 1200
15 3300	14 1100	13 900

Figure A. Evaluating water rights in all adjacent sections

12. A section's TIN is the *maximum sum* of any four adjacent section index values. In the figure below, section 11 has a TIN of 7,500 acre-feet per year.

3 800	2 1600	1 2100
10 2600	11 500	12 1200
15 3300	14 1100	13 900

Sum = 5500

3 800	2 1600	1 2100
10 2600	11 500	12 1200
15 3300	14 1100	13 900

Sum = 5400

3 800	2 1600	1 2100
10 2600	11 500	12 1200
15 3300	14 1100	13 900

Sum = 7500

3 800	2 1600	1 2100
10 2600	11 500	12 1200
15 3300	14 1100	13 900

Sum = 3700

Figure B. Determining the TIN for a particular section by calculating the maximum sum