

## Appendix F. Determination of ILF Spreadsheet Costs

### Commercial and Subdivision Development:

**Plant Material (trees and shrubs):** Costs include plant material obtained from local vendors and labor for installation. Costs were determined for 1-gallon, 5-gallon, and 15-gallon sized plants. Overall, ILF costs were calculated by averaging 12 commercial/residential ILF submittals obtained over a seven year period (2005-2011). Riparian habitat classification was not considered when averaging plant material costs.

Assumption(s): Cost includes both plant material and labor for installation.

**Hydroseed:** Cost assigned for hydroseeding (seed, mulch, tackifier, labor) is based on average costs received from actual ILF fee estimates. The costs were calculated by averaging 12 commercial/residential ILF submittals obtained over a seven year period (2005-2011). Riparian habitat classification was not considered when averaging hydroseed costs.

Assumption(s): Seed will be applied via hydroseed method.

**Irrigation:** Cost assigned for irrigation (materials and installation) is based on average costs received from actual ILF fee estimates. The costs were calculated by averaging 12 commercial/subdivision ILF submittals, obtained over a seven year period (2005-2011). To account for cost difference between the classes of habitat, the average value (averaged across habitat classifications) was used as the base irrigation cost for IRA/H (\$2,661/acre). Once assigned, the base irrigation cost was reduced based on the number of plants installed. Tiered irrigation costs are provided in the following table:

Habitat Class	Trees	Shrubs	total # plants	% of base cost	Irrigation (\$/ac)
IRA/H, H	135	150	285	100%	\$2,661
IRA/XA	113	135	248	87%	\$2,316
IRA/XB	90	120	210	74%	\$1,961
IRA/XC	68	105	173	61%	\$1,615
IRA/XD	45	75	120	42%	\$1,120
XA	75	90	165	58%	\$1,541
XB	60	80	140	49%	\$1,307
XC	45	70	115	40%	\$1,074
XD	30	50	80	28%	\$747

After cost data was tabulated, the cost values were compared to total cost for plant material only (trees and shrubs) and a percentage was determined. Irrigation costs were determined to be approximately 30% of the total plant material costs. For example, if plant material cost for a project is \$3,600.00, irrigation cost would be calculated as follows:  $\$3,600 \times 0.30 = \mathbf{\$1,080}$ .

Assumption(s): Although there will be a base cost for installing an irrigation system, regardless of the number of plants installed, it is known that cost for irrigation will decrease as the quantity of plants installed decrease. This premise was used when developing irrigation cost data.

**Maintenance:** Cost was calculated for five years of maintenance based on average costs received from actual ILF fee estimates. The costs were calculated by averaging 12 commercial/subdivision ILF submittals over a range of riparian habitat classifications. Out of 12 ILF submittals reviewed, only one provided maintenance costs for Class H habitat mitigation, and the value appeared excessively high compared to other cost data received (cost for maintenance of Class H was calculated to be \$14,760 per acre, compared with an average cost of \$3,730 per acre for xeroriparian habitat). Therefore, single-lot ILF fee submittals, which provided more comprehensive cost comparison data between Xeroriparian vs. Class H habitat, were reviewed. From the data, it was determined that maintenance costs for Class H habitat are typically 35% higher than maintenance costs

for xeroriparian habitat. A base cost for Class H (\$5,035/acre) was calculated by adding 35% to the average base cost for xeroriparian habitat (\$3,730/acre). Once assigned, the base maintenance cost was reduced based on the number of plants installed. Tiered maintenance costs are provided in the following table:

Habitat Class	Trees	Shrubs	total # plants	% of base cost	5-yr maintenance (\$/ac)
IRA/H, H	135	150	285		\$5,035
IRA/XA	113	135	248	100%	\$3,730
IRA/XB	90	120	210	85%	\$3,158
IRA/XC	68	105	173	70%	\$2,602
IRA/XD	45	75	120	48%	\$1,805
XA	75	90	165	67%	\$2,482
XB	60	80	140	56%	\$2,106
XC	45	70	115	46%	\$1,730
XD	30	50	80	32%	\$1,203

After cost data was tabulated, the cost values were compared to total cost for plant material only (trees and shrubs) and a percentage was determined. On average, maintenance costs were determined to be approximately 45% of total plant material costs, regardless of habitat type. For example, if plant material costs for a project equal \$3,600.00, maintenance cost would be calculated as follows:  $\$3,600 \times 0.45 = \$1,620$ .

Assumption(s): Although there will be a base cost for maintenance, regardless of the number of plants installed, it is known that maintenance costs will decrease as the quantity of plants installed decrease. This premise was used when developing maintenance cost data. The District used single-lot data to determine percentage of difference between xeroriparian and Class H maintenance costs, which should realistically reflect cost difference due to higher water use plant species and increased quantity of plants.

**Monitoring:** Monitoring costs were obtained from local consulting firms and are based on riparian habitat mitigation plans (RHMP) from approved development projects. Two projects were reviewed and monitoring costs calculated based on requirements outlined in the “*Riparian Habitat Mitigation Plan Annual Monitoring Report Checklist for Subdivision Plats and Development Plans*”. Based on this analysis, an average cost of \$1,500 per acre per year was calculated. For xeroriparian habitat, this would be equivalent to \$4,500 over a three year period. For Class H and Important Riparian Areas, the value would increase to \$11,250 over a five year period.

### Single-lot Development

**Plant Material (trees and shrubs):** Plant material costs were obtained from local vendors and are based on average costs received from actual ILF fee estimates. The costs were calculated by averaging 5 single-lot ILF submittals obtained over a six year period (2006-2011). Costs were determined for 1-gallon, 5-gallon, and 15-gallon sized plants.

Assumption(s): Property owner will install plants, therefore labor costs are not included, only plant material costs.

**Seeding:** Seed cost is based on an average cost of seed per acre, obtained from local vendors.

Assumption(s): The property owner will purchase seed directly from the vendor and apply seed to the mitigation area by hand (broadcast seeding).

**Irrigation:** A cost was assigned for irrigation (materials and installation) based on average costs received from actual ILF fee estimates. The costs were calculated by averaging 5 single-lot ILF submittals obtained over a

six year period (2006-2011). Riparian habitat classification was not considered when averaging irrigation costs.

Assumption(s): Property owner will install a drip irrigation system.

**Maintenance:** Average maintenance cost is based on annual water requirements for plants, plant replacement at 5% over five years, and invasive species control (see calculations below). Maintenance costs are derived from actual estimates obtained from ILF proposals submitted over the past six years (2006-2011). Cost estimates are based on actual plant water use, using City of Tucson water rates (<http://cms3.tucsonaz.gov/water/new-rates>), plant replacement at 5% of the total number of plants installed, and invasive species control. Cost of maintenance for Xeroriparian vs. Class H habitat was determined separately and is shown in the ILF calculation spreadsheet.

Single-lot development – break-down of maintenance costs per acre:

Water for plants over 5 years (Class H) = \$462/ac

Water for plants over 5 years (Xeroriparian - average taken for all classes of habitat (XA-XC)) = \$183/ac

Replacement Plants (replace at 5%) for Class H = \$461/ac

Replacement Plants (replace at 5%) for Xeroriparian (average taken for all classes of habitat (XA-XC)) = \$303/ac

Invasive species control – purchase of 1 - 32 oz bottle of Roundup per year (makes 10 gallons of herbicide) = \$125/ac

Maintenance cost for Class H =  $462+461+125 = \$1,048$  (round to \$1,050)

Maintenance cost for Xeroriparian =  $183+303+125 = \$611$  (round to \$610)

Assumption(s): Invasive species control is cost to purchase herbicide only, and it is assumed labor is performed by the property owner.

**Monitoring:** A monitoring cost was not assigned for single-lot ILF estimates since the property owner will be monitoring the site.

Assumption(s): Costs for monitoring will be minimal (e.g., cost for paper to draft report and postage to mail report).

Alternative to Using the ILF Spreadsheet Provided by the District

As an alternative to using standard cost estimates provided by the District, the applicant has the option to submit a reasonable cost estimate for the ILF, prepared by a qualified professional. The applicant may provide a cost estimate for the entire fee or determine costs for a portion of the fee, using District costs for the remaining portion(s) of the fee. Requirements for this option are outlined in Section 2 of the Guidelines.