# BAKER RIVER PROJECT RELICENSE

## Technical Scenario Teamlet Conference Call

**April 17, 2003**

**10:00 a.m. – 12:00 p.m.**
**Dial in: (866) 280-6429**
**Guest #: 144995**
**OBC-14N Conference Room**

## AGENDA

| | |
|---|---|
| 1. Review Notes | 10:00 – 10:10 |
| 2. Review Action Items | 10:10 – 10:20 |
| 3. HYDROPS Status Report | 10:20 – 10:50 |
| 4. HYDROPS Background Information | 10:50 – 11:10 |
| 5. Synoptic Input/Output Report Outline | 11:10 – 11:25 |
| 6. Schedule Next Meeting or Conference Call | 11:25 - 11:30 |

*April 17, 2003*

# BAKER RIVER PROJECT RELICENSE

## Technical Scenario Teamlet

April 17, 2003
PSE Office (One Bellevue Center)
Bellevue, WA

## FINAL DRAFT MEETING NOTES

**Teamlet Leader**: Paul Wetherbee, 425-462-3746, paul.wetherbee@pse.com

**PRESENT:** Paul Wetherbee and Lloyd Pernela (PSE), Ruth Mathews on phone (The Nature Conservancy), Stan Walsh on phone (Skagit System Cooperative), Margaret Beilharz on phone (USFS), Mark Killgore (The Louis Berger Group), Gary Sprague on phone (WDFW), Stuart Beck on phone (R-2), and Lyn Wiltse, facilitator (PDSA Consulting, Inc.).

### FUTURE REGULAR WORKING GROUP DATES/LOCATIONS

***NOTE: The May 2 meeting has been changed to May 5*** *so we can incorporate feedback from the May 2 Instream Flows Technical Working Group meeting. We will meet at 10:00 to noon.*

April 25, May 5 (changed from May 2), May 9 from 10:00-noon at PSE Office in Bellevue. These meetings will mostly be by conference call: Dial 1-866-280-6429. Enter participant code 144995#. For those planning to attend in person, the meetings will be in the conference room of OBC (One Bellevue Center) on the 12th floor.

### DRAFT AGENDA for APRIL 17 Meeting

10:00 – Noon, One Bellevue Center, (14th floor conference room) Bellevue, WA

1. Review Notes
2. Review Action Items
3. HYDROPS Status Report
4. HYDROPS Background Information
5. Synoptic Input/Output Report Outline
6. Set Agenda for May 5 meeting and determine need for facilitation

**NEW ACTION ITEMS**

- Lyn: Update draft of norms for review at our April 25 meeting and send to Paul to distribute along with draft notes from this meeting.
- Paul: Incorporate suggested changes (in italics) to draft minutes from April 9 meeting and send out final version of notes prior to April 25 meeting.
- Paul: Send out what constitutes the baseline scenario(s).
- Paul: Send out sample scenarios (proposed base-case) run and results.
- Paul: Update TST Operations diagram and distribute to teamlet members: Include title, revision date, double arrows, Solution Team, definition of $Q_{SRNC}$, add #7 and 8 to list of teamlet activities, etc.
- Lloyd: Send out list of all HYDROPS technical background information available on the website.
- Lloyd: See that HYDROPS demonstration PowerPoint slides are updates, copyrighted, and distributed by April 25.
- Stan: Send Paul written text for at least of one of desired scenarios by April 21.
- Paul: Draft input request form based on example(s) provided by Stan and Phil and send it to Margaret for review by April 23.
- Margaret: Review/edit Paul's draft of input request form and send it back to him on April 24.
- Paul: Incorporate Margaret's feedback and send draft input request form out to teamlet members for review on April 24.
- All: Review draft input request form on April 24 and be ready to discuss at our April 25 meeting.
- Ruth: Button up with Stuart re: IHA analysis.
- Mark: Draft white paper on dependable capacity and model implementation and send to Paul to distribute prior to our May 5 meeting.

**REPORT ON OLD ACTION ITEMS**

- ALL: Reviewed HYDROPS request form on PSE website. The consensus was that this request form assumed a more sophisticated level of understanding of the HYDROPS model than exists among the majority of the Working Group participants. Nor is it very user friendly.
- ALL: Sent suggestions for Input/Output package to Paul by April 14. An easier format might include a checklist so people would understand what their choices are in defining a model run. It would be good to display these on an input scenario form so they are easily transferable to the output form. Paul will work with Margaret to attempt to put together such an input form, using scenario request(s) from Stan and Phil.
- Paul: Created a draft template of inputs/outputs and sent to teamlet members to review prior to our April 17 meeting.

**HYDROPS STATUS REPORT**

Paul reported that he, Lloyd, Mark, Joel, and Cary met with Tung and Joyce of the Powel Group on April 11 to discuss the status and functionality of the HYDROPS model. He walked us through a Powel Memorandum from that date outlining which changes to enhancements (A1 – A17) to the software would be completed by April 25. The memo also listed other software

enhancements that would be complete by June 1. There was also a wish list item (C) that was not tied to a specific time table. A limitation of the model is that is only able to use a single spawning/incubation period.

Paul will return to Victoria for another visit with Tung and Joyce on April 24 and 25. He hopes to return with the model (containing the A list of enhancements).

**SYNOPTIC INPUT/OUTPUT OUTLINE**
Margaret reported that we are looking at providing requesters of runs 5 or fewer pages of output per scenario. These might include:

- Title page for the run
- List of all that went into the run
- Time series plots
- Statistical analysis

Note: High frequency output will always be stored and available for subsequent analyses.

Ruth will finish reviewing the A24 Study Report that R2 put out and button up with Stuart re: R2's treatment of the IHA analysis that they included along with some additional analysis indicators that the R2 biologists feel are critical to include for the Baker and Skagit Rivers. We will want to be able to show how the Baker Project relates to the effect of the already altered flow it receives from upstream. We would monitor the 33 IHA parameters at the gage at Baker River below the confluence. We will get an update on how to integrate these parameters into our analysis at out April 25 meeting. *Unregulated flows on the Skagit are not intended to be modeled using IHA.*

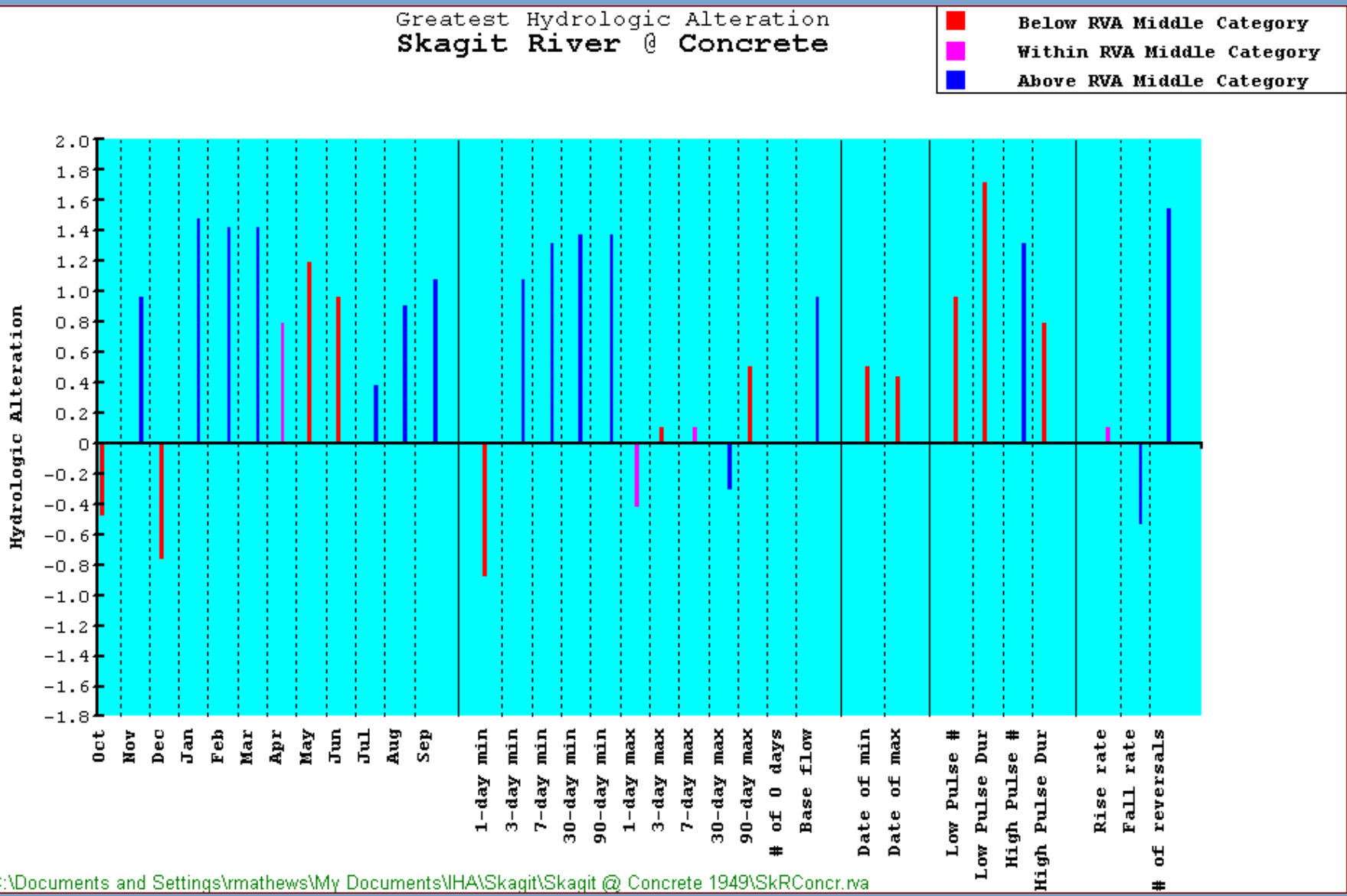
**FUTURE ISSUES TO ADDRESS**
Assumptions (e.g., economic *parameters*, *dependable capacity*, price factors, *force majeur*, tc.)
Hydro Climate Analysis Scenario
Fisheries Definition – *i.e. the interaction of the HYDROPS and R2 model post-processing*
Others?

**AGENDA FOR APRIL 25, 2003**
10:00 – noon at PSE Office in Bellevue (14th floor conference room)

1. Review Notes
2. Review Action Items (and draft norms)
3. HYDROPS Status Report
4. Review draft of input request form
5. Review Baseline scenario(s)
6. Set agenda for May 5 meeting:
    - Include report from Instream Flows Technical Working Group mtg. on May 2.
    - Lyn will be out of town: Get alternate facilitator? Go without? Plan who will do the notes, etc.

Greatest Hydrologic Alteration

# Skagit River @ Concrete

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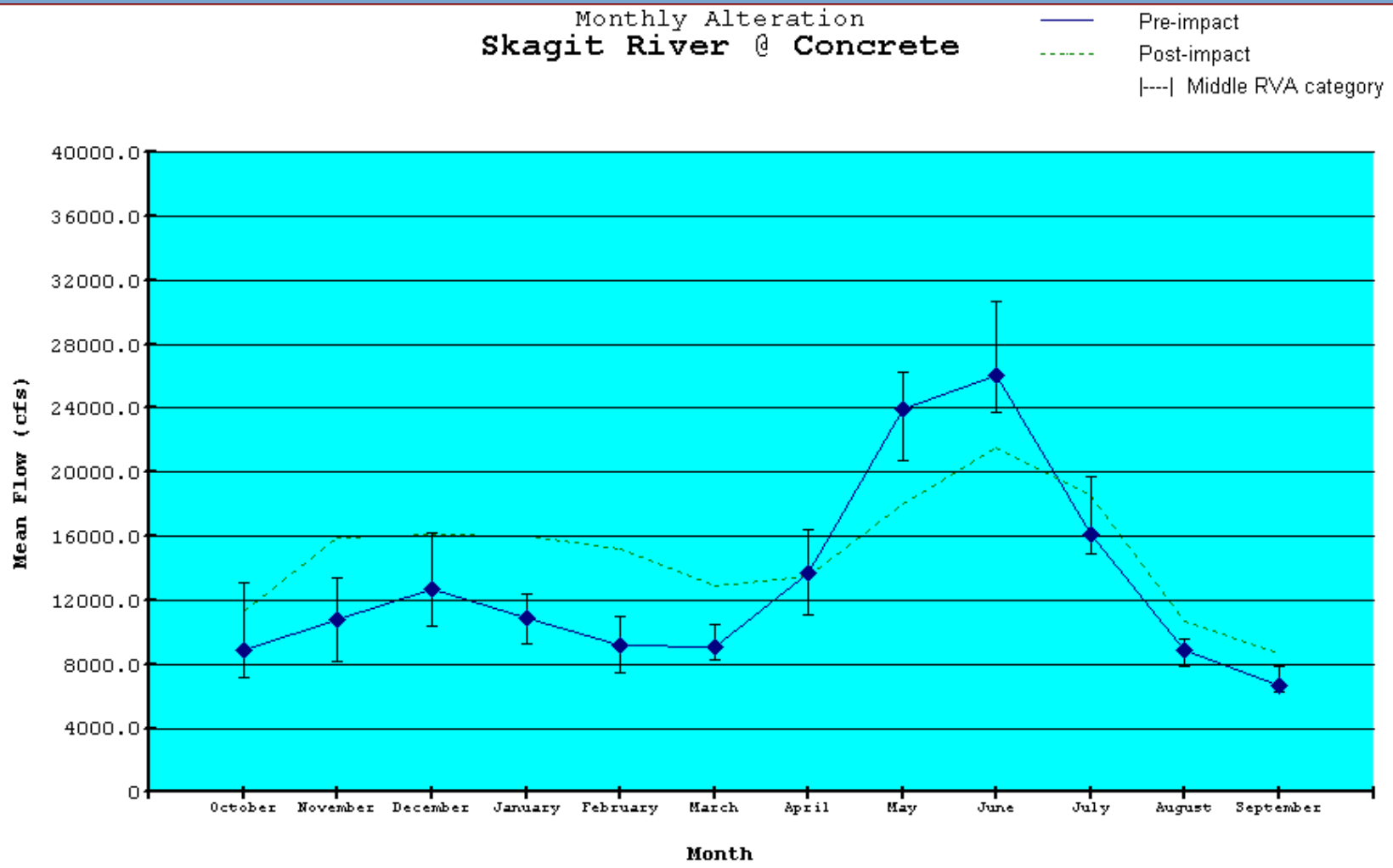


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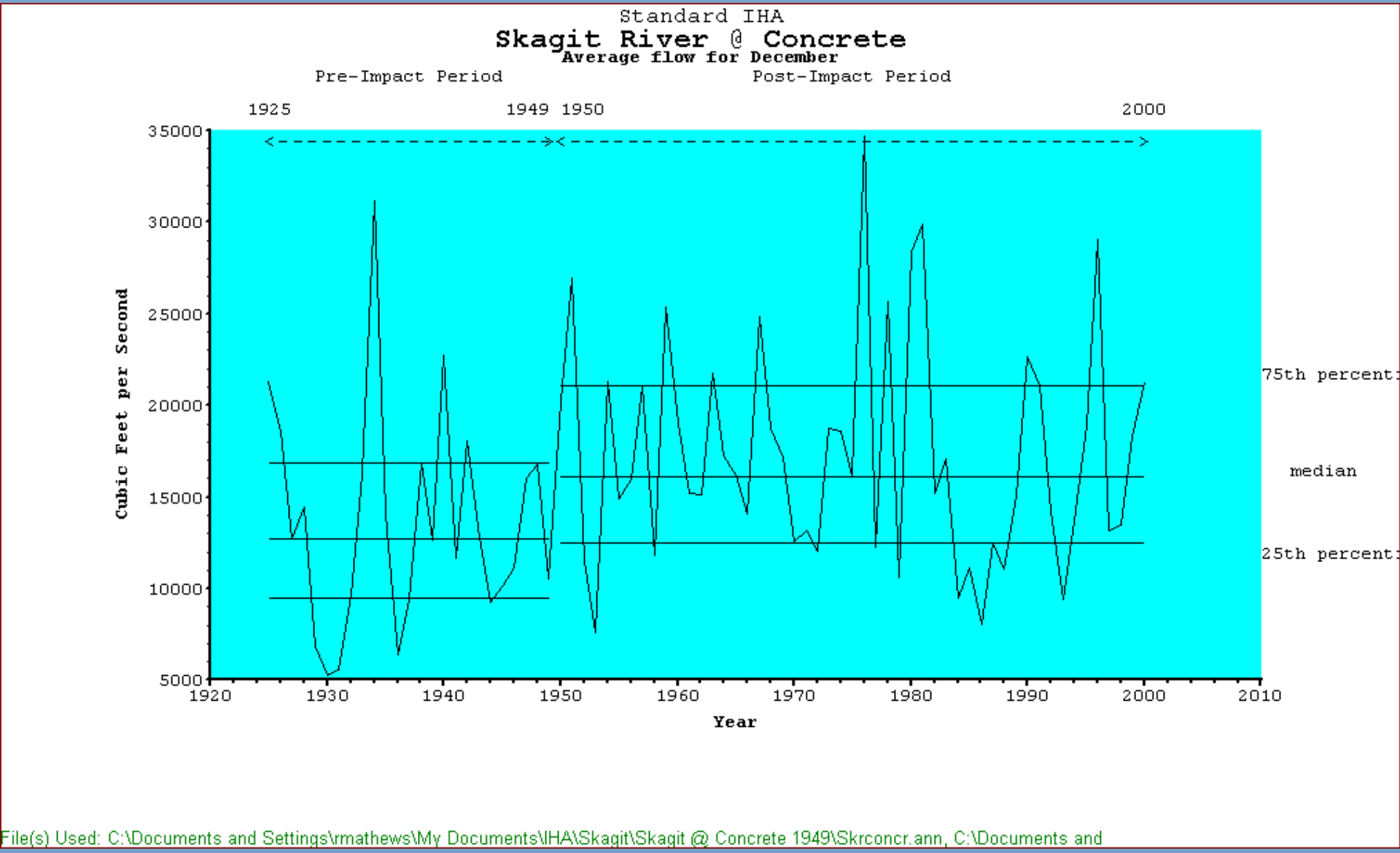


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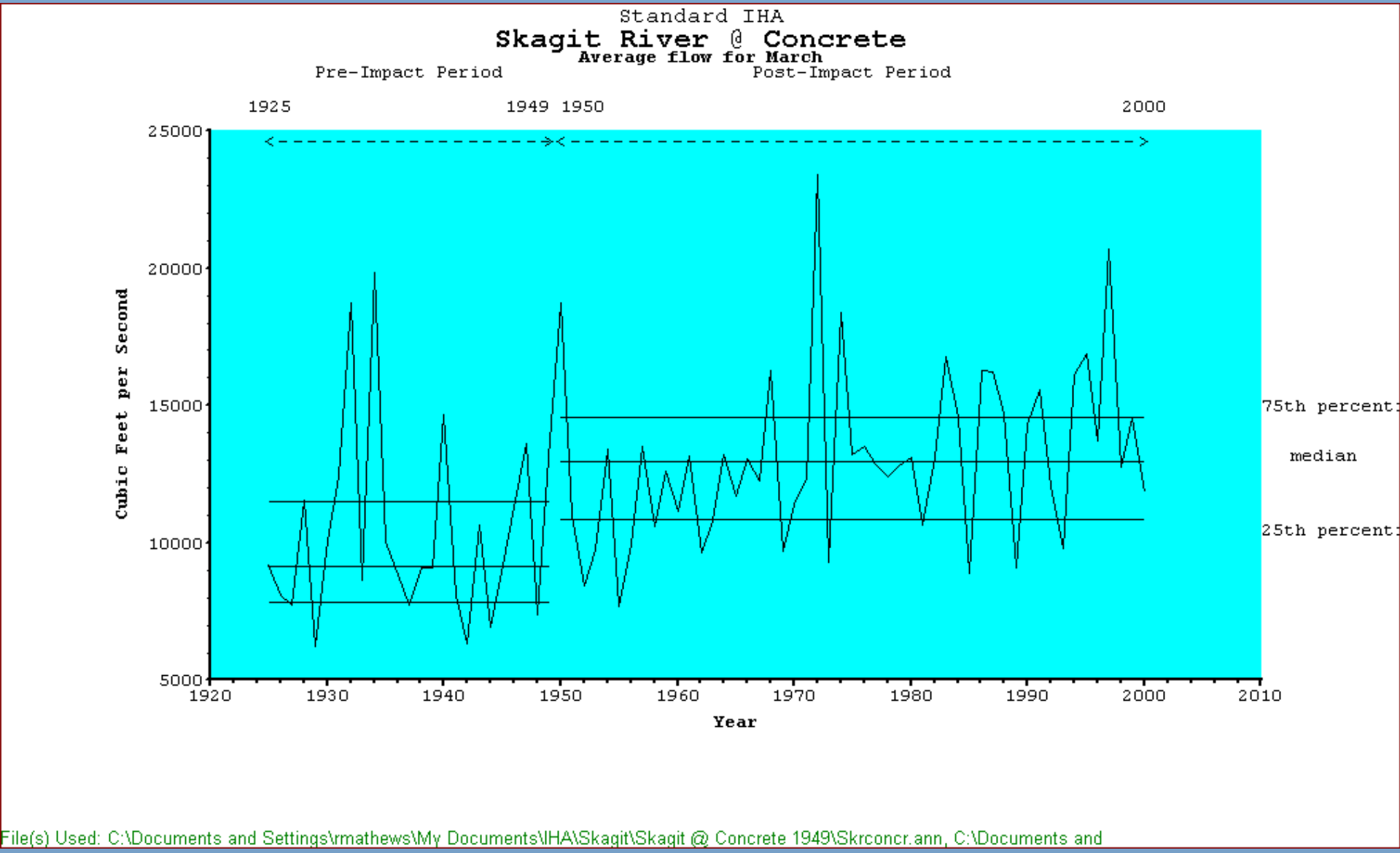


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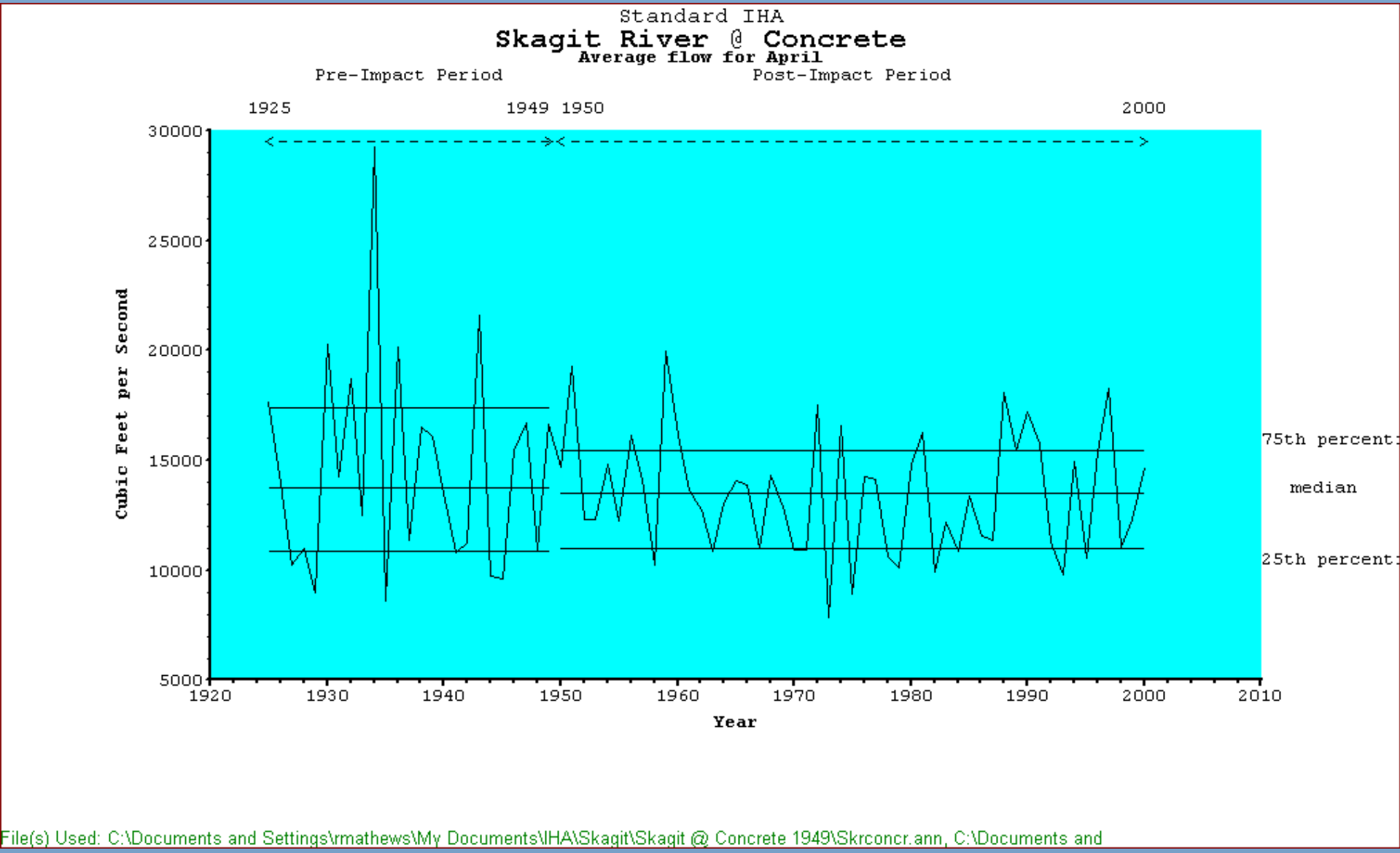


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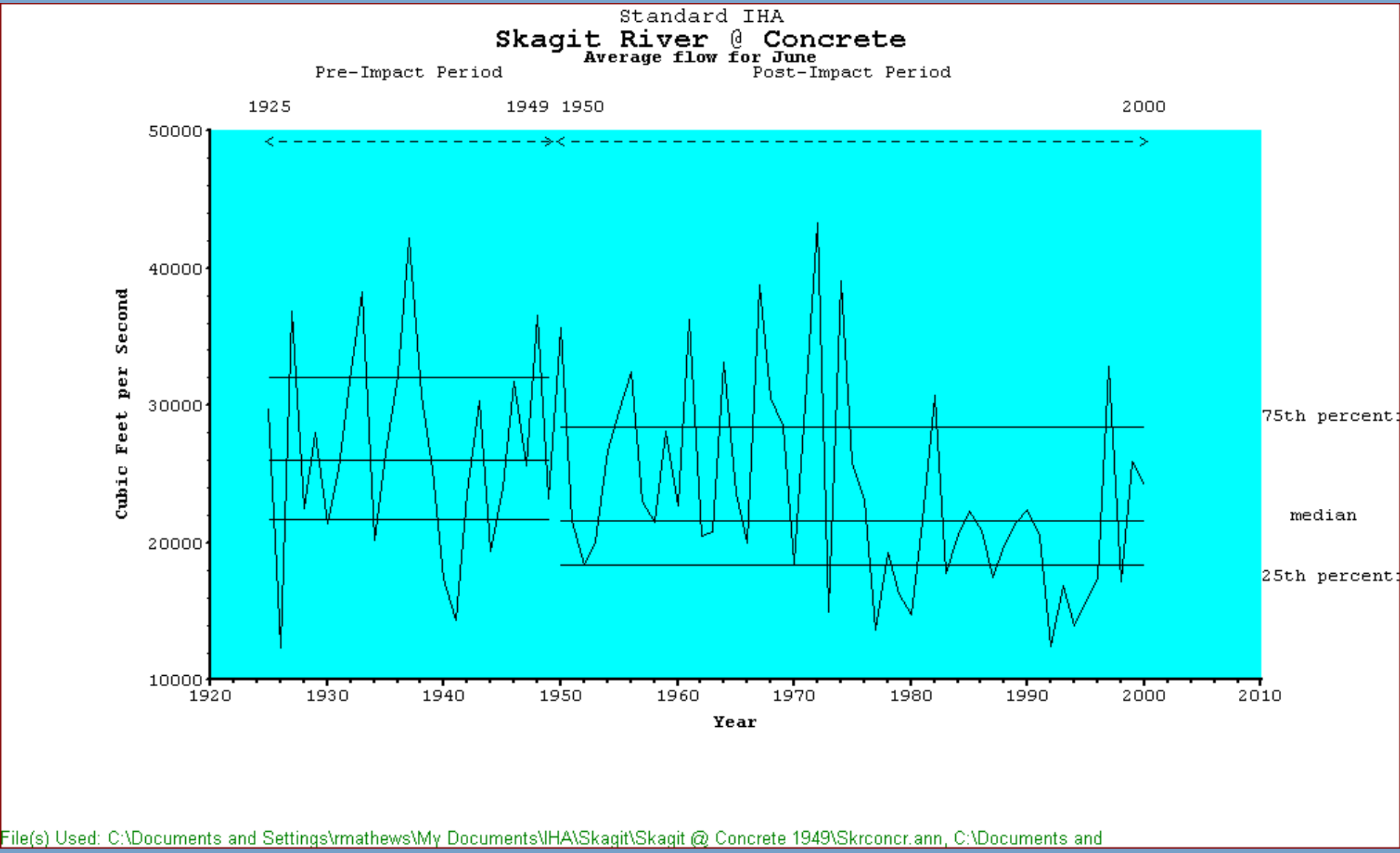


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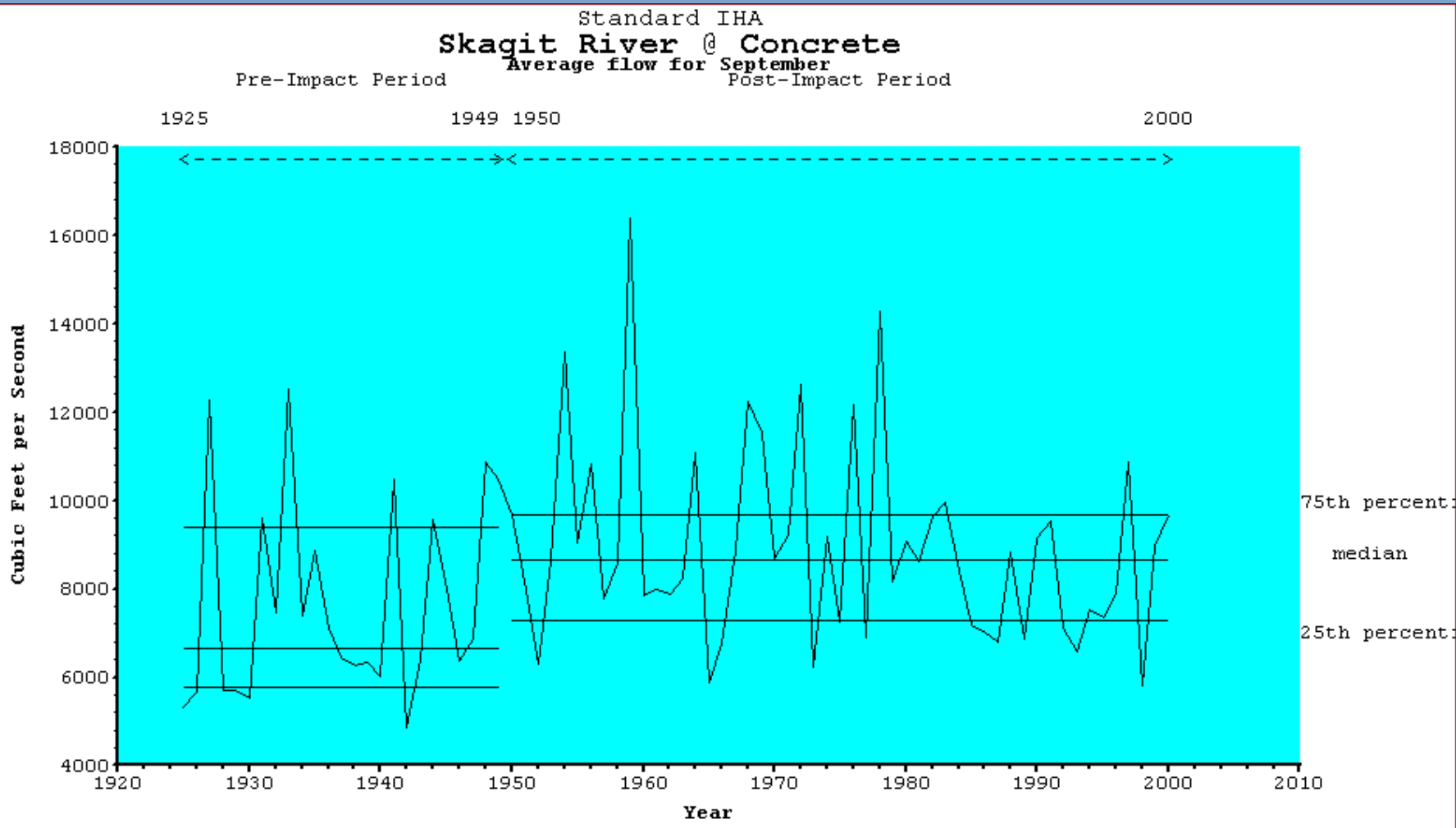


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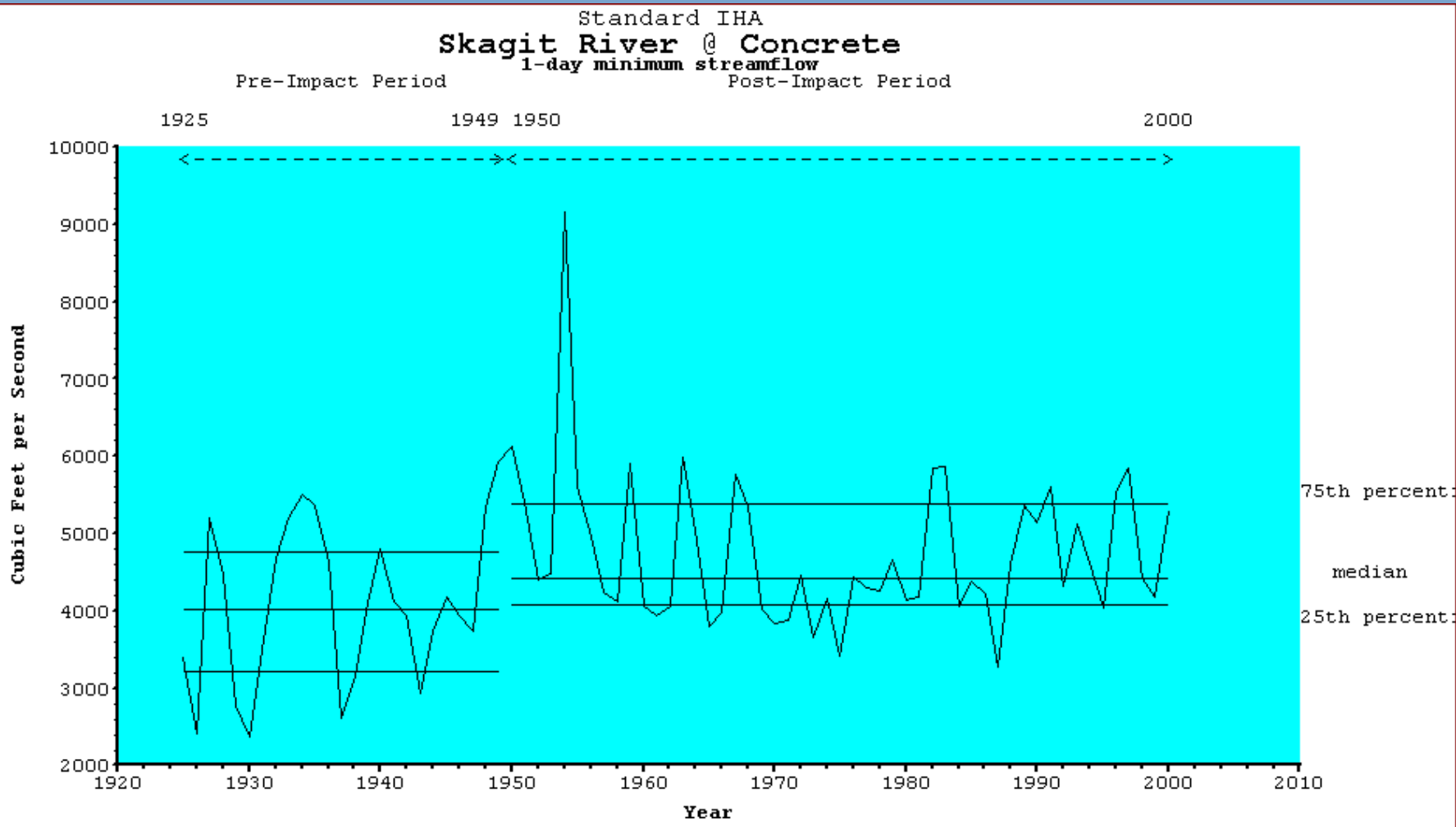


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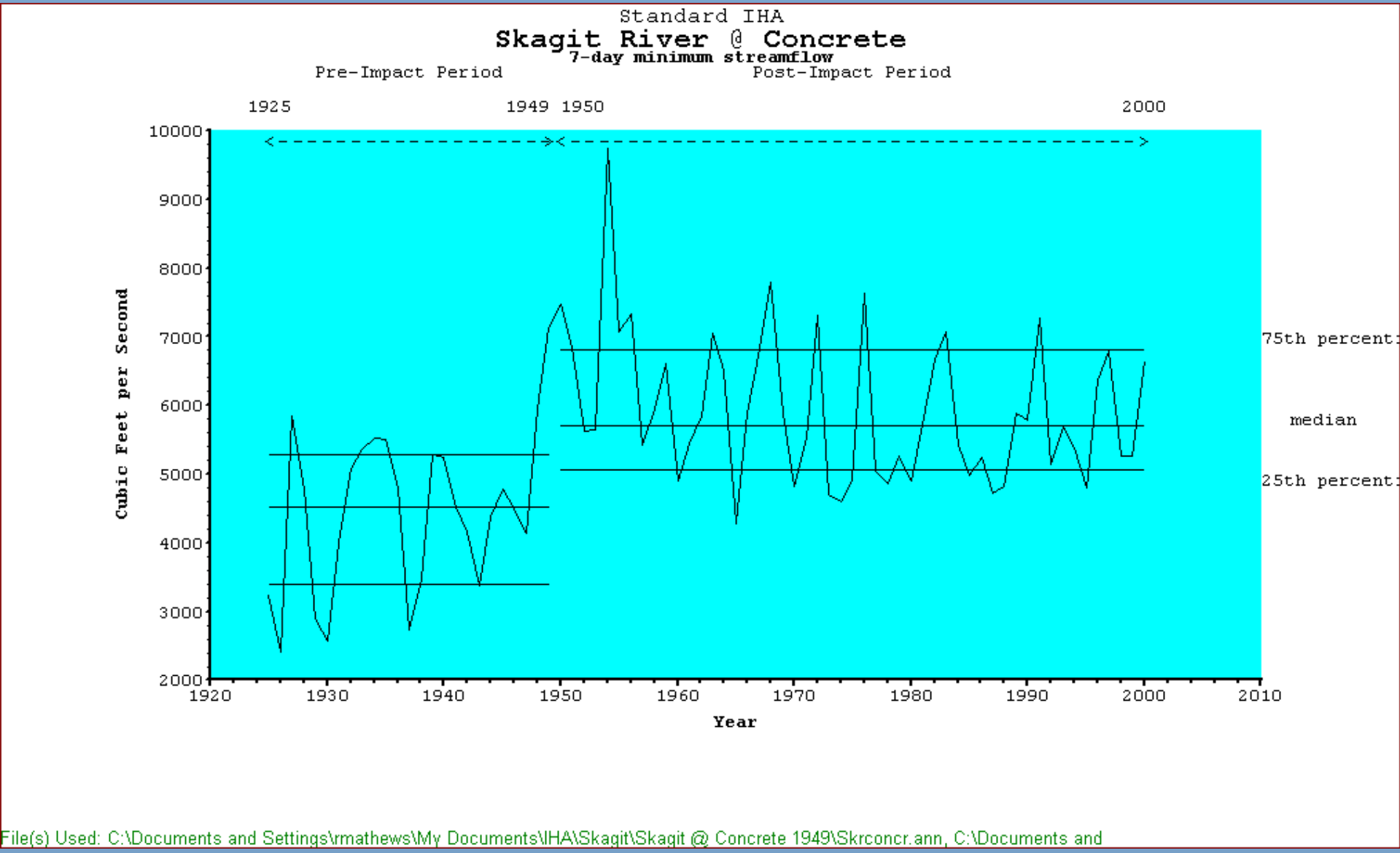


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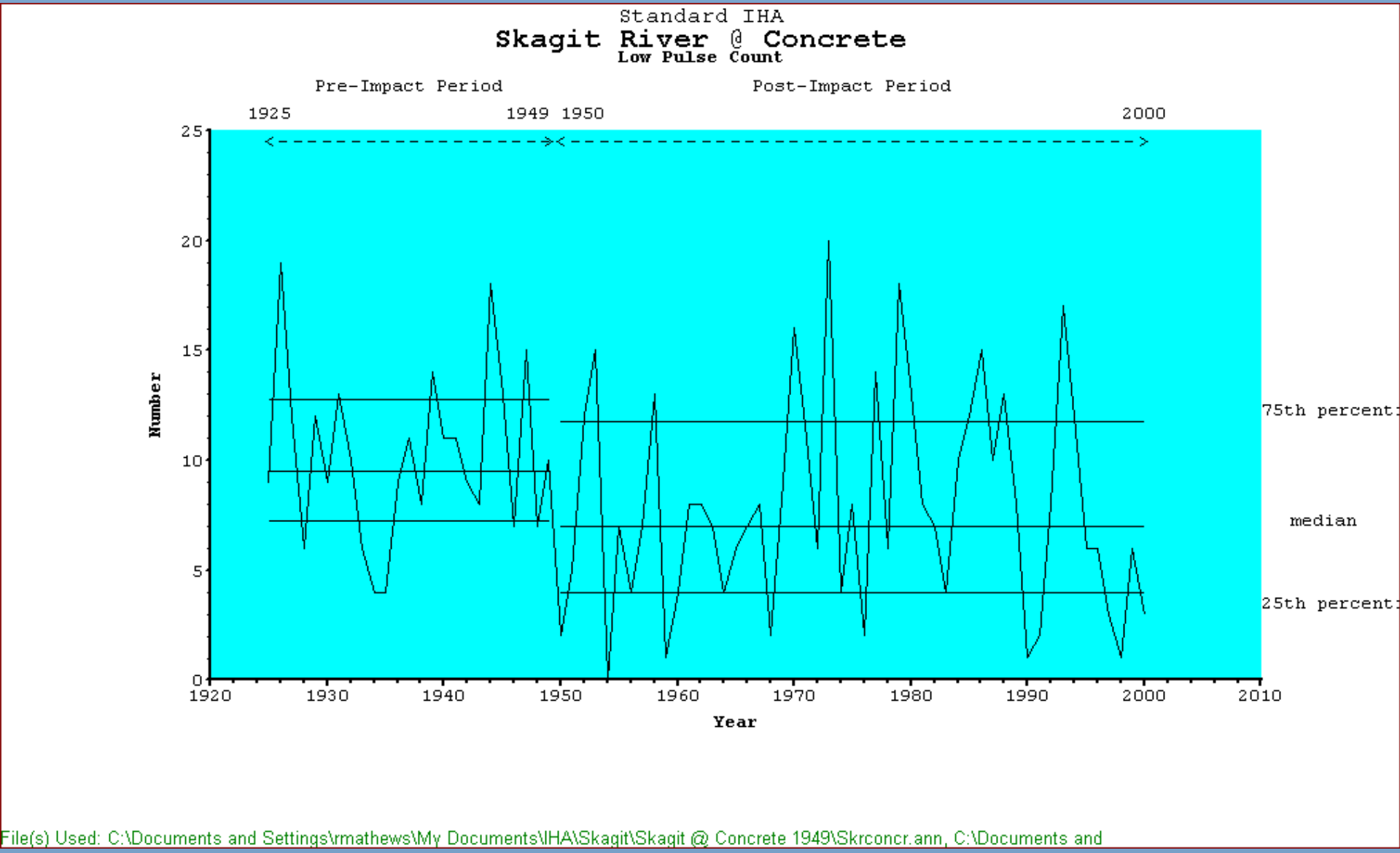


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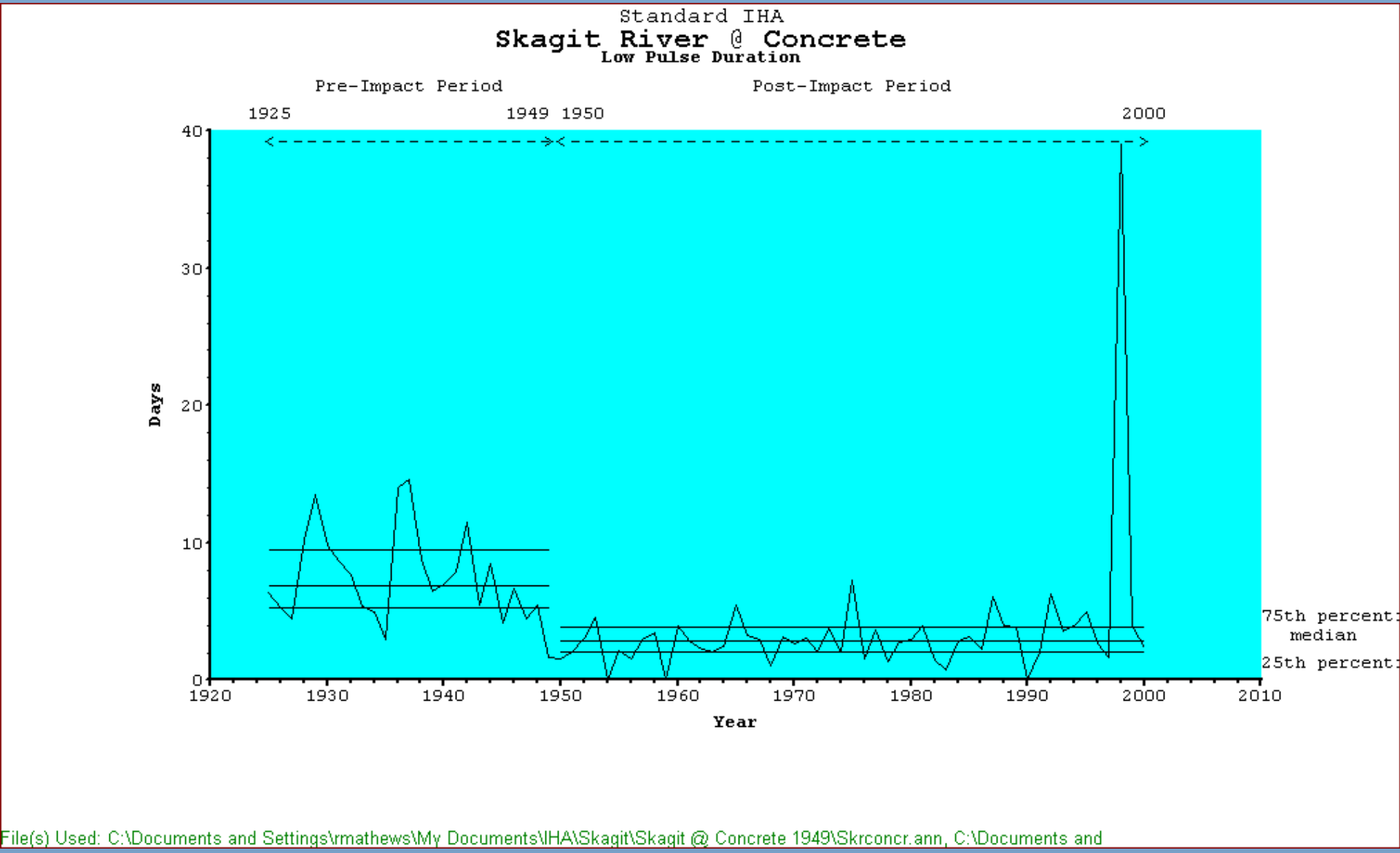


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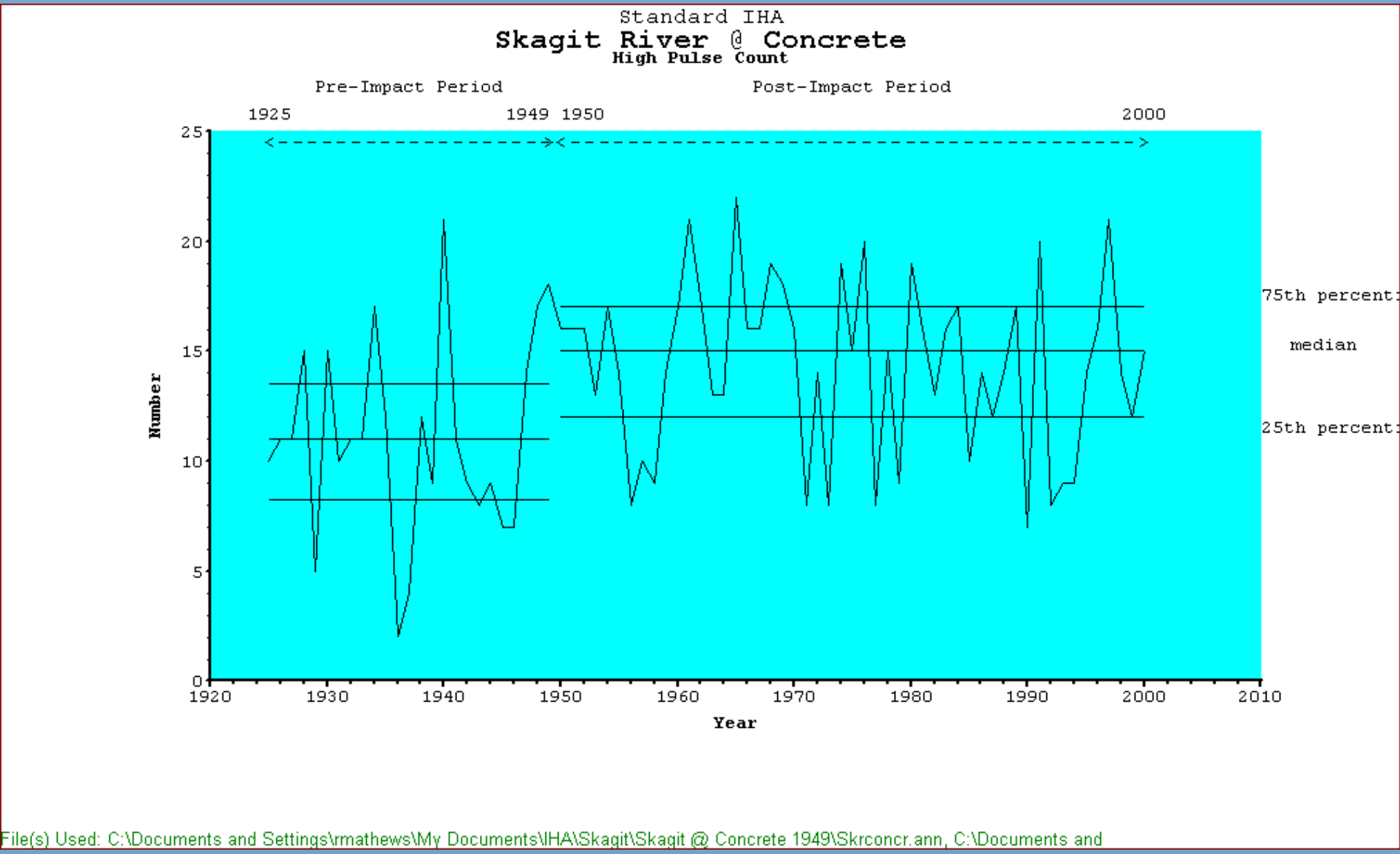


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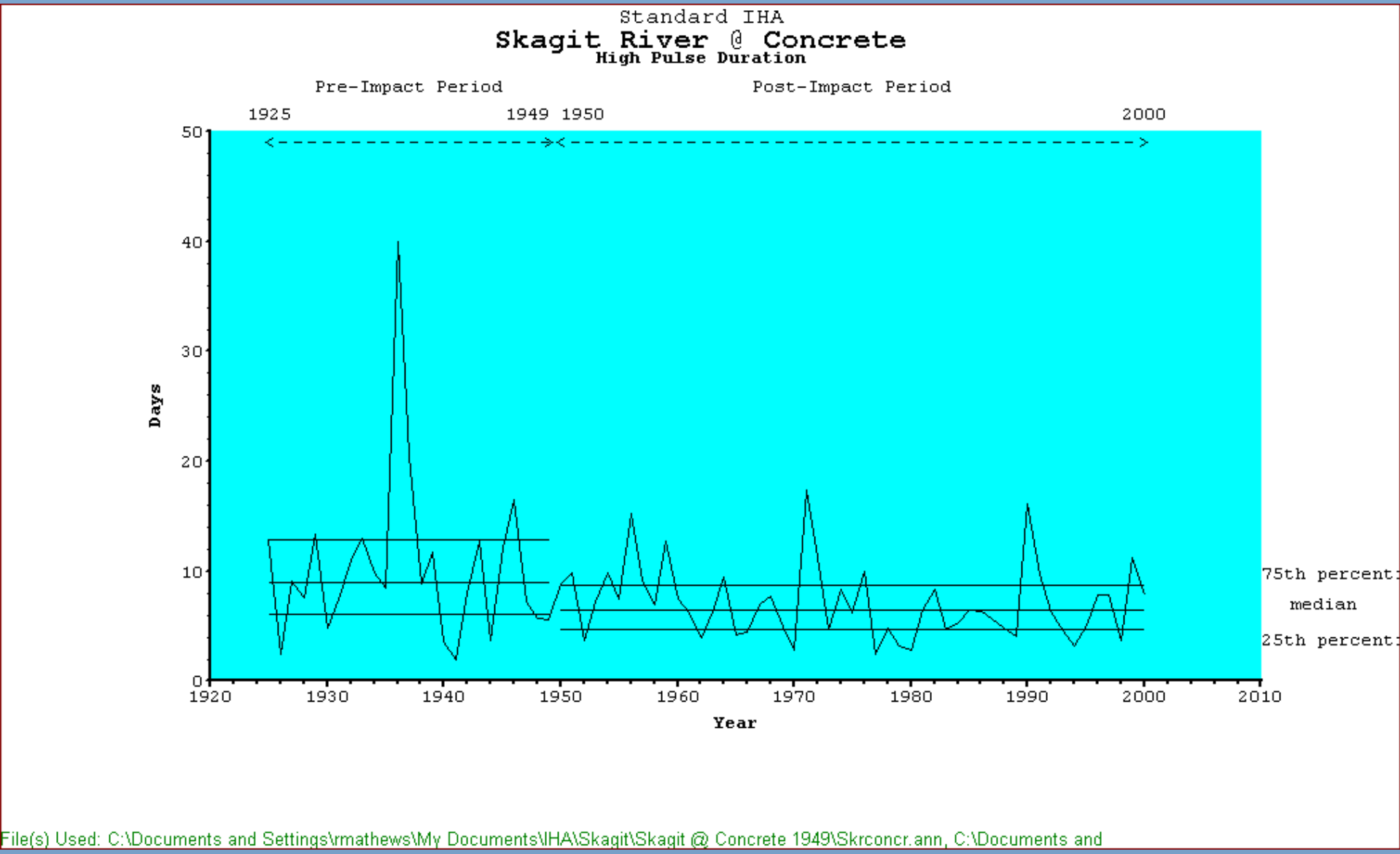


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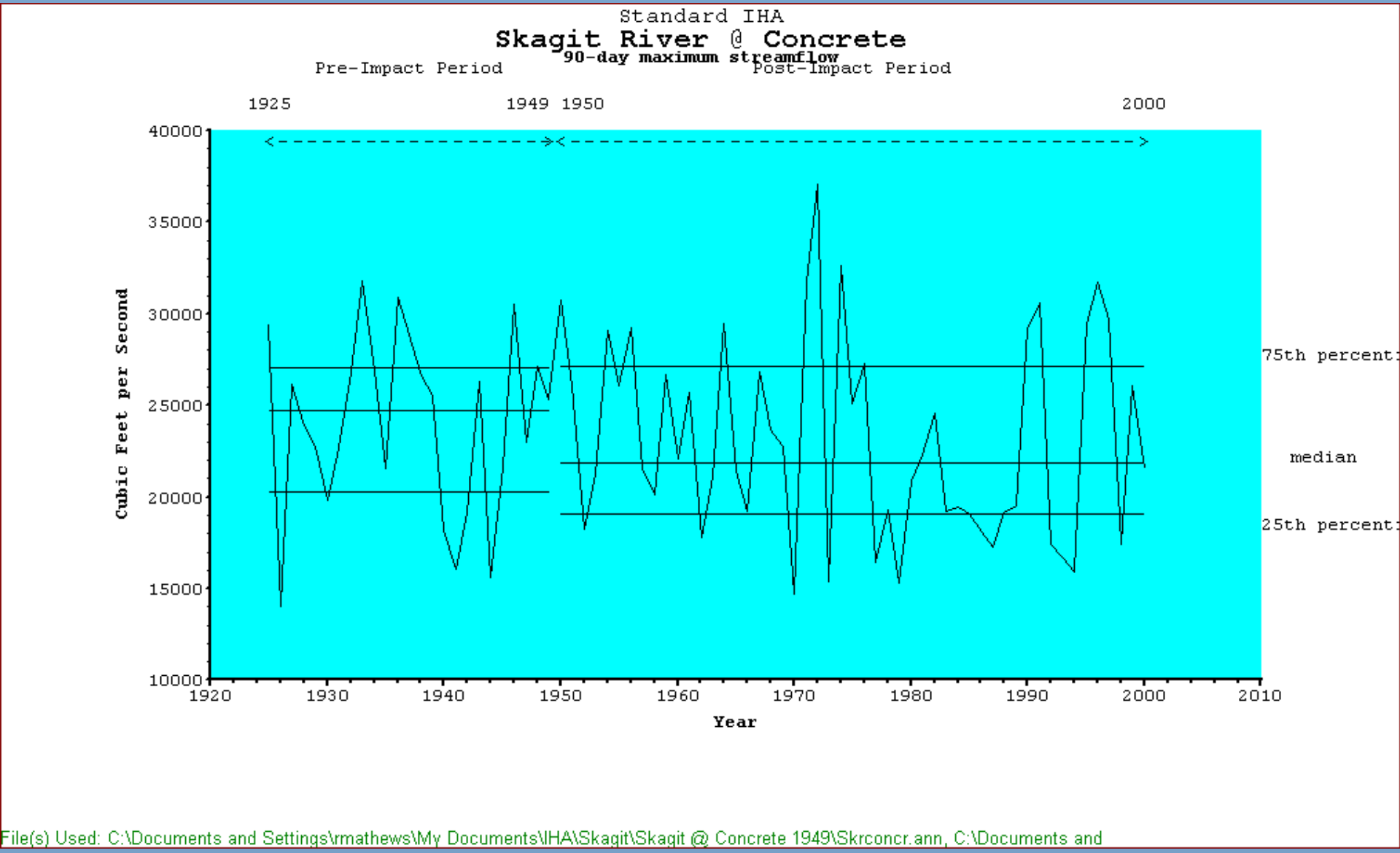


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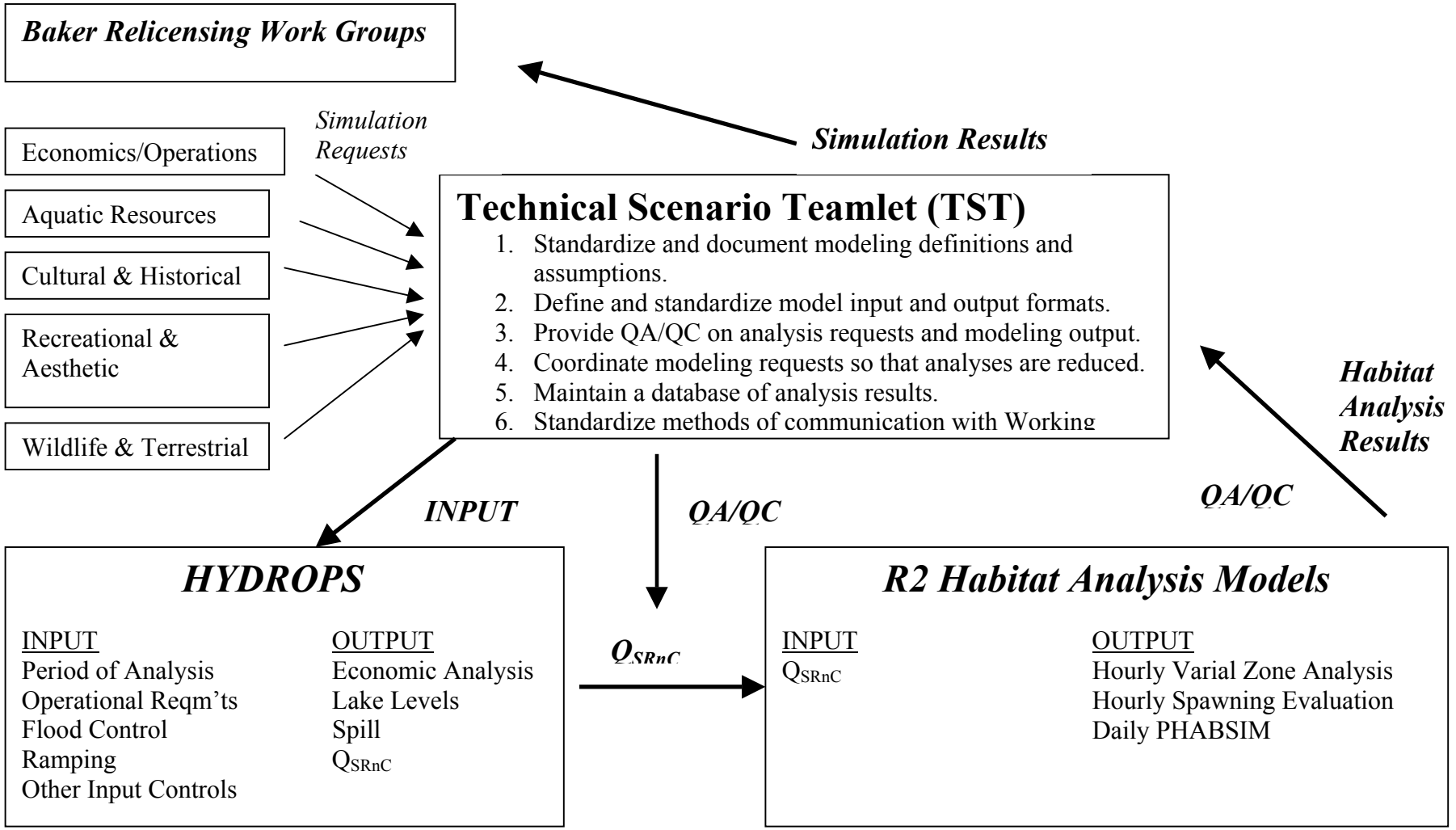
Baker Relicensing Work Groups
Simulation Requests
Simulation Results
Economics/Operations
Aquatic Resources
Cultural & Historical
Recreational & Aesthetic
Wildlife & Terrestrial
Technical Scenario Teamlet (TST)
1. Standardize and document modeling definitions and assumptions.
2. Define and standardize model input and output formats.
3. Provide QA/QC on analysis requests and modeling output.
4. Coordinate modeling requests so that analyses are reduced.
5. Maintain a database of analysis results.
6. Standardize methods of communication with Working
Habitat Analysis Results
QA/QC
INPUT
QA/QC
HYDROPS
INPUT
Period of Analysis
Operational Reqm'ts
Flood Control
Ramping
Other Input Controls
OUTPUT
Economic Analysis
Lake Levels
Spill
$Q_{SRnC}$
$Q_{SRnC}$
R2 Habitat Analysis Models
INPUT
$Q_{SRnC}$
OUTPUT
Hourly Varial Zone Analysis
Hourly Spawning Evaluation
Daily PHABSIM

# Memorandum

| | | | |
|---|---|---|---|
| **To:** | April 11 Meeting Attendees | **Date:** | April 15, 2003 |
| **From:** | Joyce Liu | **File:** | 2116.12 |
| **Subject:** | **Study Model Enhancements Post April 11 Meeting – Draft 2** | | |

The following changes and enhancements to the Baker River Study Model were identified as a result of the April 11 review meeting with PSE and Powel Group, Inc.

## A. Changes to Enhancements for April 25th, 2003

| Item | Screen/Feature | Description of Change |
|---|---|---|
| A1 | Variable Instream Flow Constraint (VIFC) window | Move interface from Optimization button to Scenario Design screen.<br><br>Change [Continue] button to [OK] button. |
| A2 | VIFC window | Save VIFC parameters in the database as a property of the Scenario. These parameters will be saved when the scenario is flagged for VIFC. |
| A3 | VIFC window | Default Spawning and Incubation periods<br><br>Spawning start date = scenario start date<br>Spawning end date = spawning start date + 3 months<br>Incubation start date = spawning start date + 1 day<br>Incubation end date = incubation start date + 6 months |
| A4 | VIFC window | Modify validation routines for dates of spawning and incubation.<br><br>Validation checks include:<br>• Spawning end (Se) <= Spawning start (Ss)<br>• Incubation end (Ie) <= Incubation start (Is)<br>• Incubation start (Is) >= Spawning start (Ss)<br>• Both Spawning and Incubation periods must fall fully within one year defined by the scenario start date (?) |
| A5 | VIFC window | Give user the option to define MIF as a hard or soft constraint. |
| A6 | VIFC window | Modify calculation of MIF based on new time period.<br><br>Take top N peak daily flows from the period between Spawning start date and the smaller of (Spawning end date or Incubation start date). Then apply the MIF to the entire Incubation period. |

| Item | Screen/Feature | Description of Change |
|---|---|---|
| A7 | VIFC window | Add 3 warning messages that may appear when the user clicks [OK] to close the VIFC window.<br><br>1. If Incubation start is before Spawning end (i.e., Is < Se), "WARNING: The top N daily peak flows will be taken from the period between Spawning start date and Incubation start date."<br>2. If the number of days in the initial critical period is less than the number of top N days, "WARNING: The period between Spawning start date and the Incubations start date will be used to determine the new MIF"<br>3. If the scenario start date is later than the actual spawning start date, "WARNING: The spawning period starts before the scenario start date. The spawning period will be reduced to scenario start date to Spawning end date." |
| A8 | VIFC window | Rename:<br><br>• Calculation Parameters ⇒ Incubation Flow Calculation Parameters<br>• Daily Peak Flows ⇒ Maximum Daily Average Flows<br>• Percent of Average ⇒ Incubation Flow as Percent of Average |
| A9 | VIFC Optimization | Reduce the optimization time by optimizing the weeks of interest<br><br>If the current scenario is flagged for MIF calculation and optimization:<br>1. Run the short-term optimization for the initial scenario up to the end of the spawning period, that is, pause the optimization.<br>2. Then create the MIF constraints based on the hourly results of the spawning period<br>3. Create second scenario<br>4. Optimize second scenario for entire study period. |
| A10 | Soft Constraint Prioritization | Rename:<br><br>• Constraint Detail frame ⇒ Define Constraint Priority<br>• All references to the word "Priority" ⇒ Rank |
| A11 | Ramping Rate Constraint | Add ability to define ramping rate constraint as a **hard or soft constraint** |
| A12 | Tabular Data View | Create several views to display the water balance for each project. |

| Item | Screen/Feature | Description of Change |
|---|---|---|
| A13 | Starting & Ending Conditions | Rename:<br>• Previous Year ⇒ End of Previous Year<br>• Ending Condition for all weeks in Probabilistic Optimization ⇒ Rolling Target End Level for Probabilistic Optimization |
| A14 | Scenario Design | Add [Export to Habitat Model] button to export results for R2 model.<br><br>The [Export to Habitat Model] button will call the Export feature and export results based on a predefined view created in the Tabular Data View screen. The output path is defined in the INI file and the default file format is Excel. |
| A15 | Engineering Module | Rename:<br>• Engineering Model ⇒ Engineering **Module**<br>• Spillway Rating Curve tab name ⇒ Spillway Rating Curve |
| A16 | Database | • Update UB Spillway capacity to actual value<br>• Add hourly inflow data for 1996, 1998, 2000 (small sample of the entire inflow period from 1989 to 2000)<br>• Include the following system configurations<br>  o Base LB 77 MW with rough zone penalty<br>  o Base LB 77 MW without rough zone penalty<br>  o Base LB 85 MW<br>• Include sample base case scenarios with ramping rate constraint |
| A17 | Help File | • Update all text for changes to nomenclature<br>• Update description of VIFC enhancement |

**Warnings**

1. VIFC: The minimum flow constraints are the same for each year in a multiyear scenario. For such a scenario, the calculation of MIF will include taking the average of the calculated MIF for each year and applying the final value to the minimum flow constraint.
2. Currently, the MIF is applied to the same element as the element from which the MIF is calculated (LB powerhouse discharge or LB total release). For example, if the LB powerhouse discharge is used to calculate the MIF, the MIF is applied to the minimum LB powerhouse discharge constraint.

## B. Enhancements for June 1st, 2003

| Item | Screen/Feature | Description of Change |
|---|---|---|
| B1 | Flood control | Model flood control practice at Baker Lake. This flood control is triggered based on the natural flow on Skagit River. |
| B2 | Ramping Rate Constraint | Conditional Ramping Rate Constraints<br><br>Specifically, add ability to define conditional ramping rate constraints based on a threshold flow at Upper Skagit River. |
| B3 | Engineering Module | Define tailwater curves by flow regime.<br><br>Add ability to define multiple tailwater curves based on flow regime for one powerhouse especially at UB. |
| B4 | Database | Add multiple tailwater curves based on flow regime for LB |
| B5 | Optimization | Add handling of multiple tailwater curves in the post analysis. |
| B6 | Dependable Capacity | Add constraint to meet firm generating capacity. |
| B7 | Help file | Update for all new enhancements |

## C. Enhancements that are Nice to Have

| Item | Screen/Feature | Description of Change |
|---|---|---|
| C | Inflow Selection Probabilistic – Detail Tab | Highlight selected probabilities in table |