
Inventory of the Columbia River Estuary Model Study Collection, 1921-1936 (bulk 1932-1936)

Collection number: MS 79/7

The Water Resources Center Archives

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Berkeley, California

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Descriptive Summary

Title: Columbia River Estuary Model Study Collection,

Date (inclusive): 1921-1936 (bulk 1932-1936)

Collection number: MS 79/7

Creator: O'Brien, Morrrough Parker, 1902-1988

Extent: ca. 3 linear ft. (3 boxes)

Repository: Water Resources Center Archives (Calif.)

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Shelf location: This collection is stored off-campus at NRLF. Please contact WRCA staff for access to the materials.

Language: English

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Preferred Citation

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Access Points

Columbia River Estuary (Or. and Wash.) -- Models

Hydraulic models

Tidal currents

Sediment transport

Bed load

Beach erosion

Navigation

Water waves -- Columbia River

United States. Navy Dept. Bureau of Ships

United States. Tidal Model Laboratory

University of California, Berkeley. Dept. of Engineering. Fluid Mechanics Laboratory

United States. Army. Corps of Engineers. North Pacific Division

Scope and Content

Under the leadership of Morrrough P. O'Brien, a model of the estuary of the Columbia River was built and tested at the University of California, Berkeley, to study the effects of proposed changes in the navigation channels on currents and sediment movement. The project was sponsored by the North Pacific Division of the U.S. Army Corps of Engineers and was called the "U.S. Tidal Model Laboratory." A description of the work can be found in "Field and laboratory studies, navigation channels of the Columbia River Estuary," *Proceedings of the 13th Conference on Coastal Engineering*, American Society of Civil Engineers, 1972, p. 2475-2498.

Related Collections

Morrrough P. O'Brien Papers

Box 1, Folder 1 **Technical memorandum (United States. Tidal Model Laboratory). Berkeley, Calif. : U.S. Tidal Model Laboratory, 1934-1936. 23 v.**

Folder 1.1 **Design of a model of the estuary of the Columbia River. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1934. (Technical memorandum ; no. 1). 89 leaves. Appendix I. Theory underlying the design of models of estuaries -- Appendix II. The transportation of bed- load by streams / by Morrrough P. O'Brien and Bruce D. Rindlaub -- Appendix III. Characteristics of Columbia River estuary.**

Folder 1.2 **O'Brien, M. P., and Bruce D. Rindlaub. Partial report on comparative tests of transportation of Newport Bay and Sacramento River sands in pipelines. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1934. (Technical memorandum ; no. 2). 34 leaves : photographs. Appendix I. Fall velocity of particles in still water -- Appendix II. Microscopic examination of sands / report of Professor N. F. Ward -- Appendix III. Formulas and sample computations.**

Folder 1.3 **O'Brien, M. P., and Bruce D. Rindlaub. Partial report of friction tests of polished steel plate moving over sand under water. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1934. (Technical memorandum ; no. 3). 5 leaves.**

Folder 1.4 **O'Brien, M. P., and Bruce D. Rindlaub. Final report on comparative tests of transportation of Newport Bay and Sacramento River sands in pipelines. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1935. (Technical memorandum ; no. 4). 56 leaves : photographs. Appendix I. Fall velocity of particles in still water -- Appendix II. Microscopic examination of sands / report of Professor N. F. Ward -- Appendix III. Formulas and sample computations.**

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- Folder 1.5 O'Brien, M. P., and Bruce D. Rindlaub. Final report on transportation of sand in pipe lines. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1935. (Technical memorandum ; no. 5). 69 leaves : photographs. Appendix I. Fall velocity of particles in still water -- Appendix II. Formulas and sample computations -- Appendix III. Summary of final report on comparative tests of transportation of Newport Bay and Sacramento River sands in pipelines, from Technical memorandum no. 4.
- Folder 1.6 O'Brien, M. P. Mouth of Columbia River beach erosion investigations : report on experiments, July 1933-May 1935. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1935. (Technical memorandum ; no. 6). ca. 100 leaves : photographs. Appendix I. Program of beach erosion investigations -- Appendix II. Abstracts from 1903 report [of Major Langfitt, annual reports of the War Department] -- Appendix III. Summary of current survey 1932-1933 -- Appendix IV. Experiment 1: Petrographic analysis, abstracts from report of Dr. E.T. Hodge, geologist -- Appendix V. Miscellaneous data and observations.
- Folder 1.7 O'Brien, M. P. Mouth of Columbia River beach erosion investigations : report on experiments, part II. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1935. (Technical memorandum ; no. 7). 31 leaves : maps.
- Folder 1.8 O'Brien, M. P. Analysis of currents in the vicinity of Harrington Point, Columbia River. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1935. (Technical memorandum ; no. 8). 11 leaves : maps.
- Folder 1.9 O'Brien, M. P. Analysis of currents at Yaquina Bay, Oregon. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1935. (Technical memorandum ; no. 9). 4 leaves : map.
- Folder 1.10 O'Brien, M. P. Model study of currents in Baker Bay and at mouth of Columbia River, Oregon, Washington. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1935. (Technical memorandum ; no. 10). 2 v. Contents: Part I. [without special title] -- Part II. Photographs and graphs.
- Folder 1.10A O'Brien, M. P. Model study of currents in Baker Bay west entrance closed. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 10A). 1 leaf.
- Folder 1.11 O'Brien, M. P. Mouth of Columbia River beach erosion investigations. Experiment 13a: Laboratory study of transportation of Columbia River bed materials. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 11). 71 leaves. Appendix I. Photographs -- Appendix II. Experimental procedure -- Appendix III. Sample computations -- Appendix IV. Experimental results -- Appendix V. Plates.
- Folder 1.12 O'Brien, M. P. Model study of currents in vicinity of Astoria, Columbia River, Oregon, Washington. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 12). 2 v. Contents: Part I. [without special title] -- Part II. Photographs.
- Folder 1.13 O'Brien, M. P. Model study of currents in vicinity of west entrance to Baker Bay proposed jetties. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 13). 10 leaves : maps.
- Folder 1.13A O'Brien, M. P. Model studies of currents in the vicinity of the proposed jetties at the west entrance to Baker Bay (runs 22 and 23). Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 13A). 20 leaves : maps.
- Folder 1.14 O'Brien, M. P. The lag and reduction of range in tide gage wells. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 14). 24 leaves.
- Folder 1.15 O'Brien, M. P. Model study of currents in the estuary of the Columbia River (photographic measurements). Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 15). 6 leaves + 20 photo mosaics (20 leaves, bound). Photo mosaics have title: Mouth of Columbia River Estuary model : current system by photographic method. Photo mosaics shelved in WRCA map case as: mG291 F1.
- Folder 1.16 O'Brien, M. P. Model study of suggested routes for relocation of main ship channel. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 16). 21 leaves.
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- Folder 1.17 O'Brien, M. P. Correlation of laboratory and field data on the transportation of bed-load by streams. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 17). 82 leaves.
- Folder 1.18 O'Brien, M. P. Tidal characteristics of the Columbia River. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 18). 14 leaves.
- Folder 1.19 O'Brien, M. P. Model study of dikes along the main ship channel between Harrington Point and Tongue Point. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 19). 11 leaves.
- Folder 1.20 O'Brien, M. P. Mouth of Columbia River beach erosion investigations : summary of observations and results, July 1933 - August 1936. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 20). 49 leaves : 5 maps. Appendix I. Schematic representation of sand movement at the mouth of the Columbia River -- Appendix II. Wave action at Columbia River light vessel -- Appendix III. Wind transportation of sand.
- Folder 1.21 O'Brien, M. P. Final report on field and laboratory studies of the navigation channels in the estuary of the Columbia River. Berkeley, Calif. : U.S. Tidal Model Laboratory, 1936. (Technical memorandum ; no. 21). 69 leaves : maps. Appendix I. Experiment 14: Salinity survey -- Appendix II. Reliability of the model -- Appendix III. Reports and memoranda dealing with Columbia Estuary model -- Appendix IV. Diagrams of bed- movement in estuary.
- Folder 2 United States. Army. Corps of Engineers. Portland District. Office of the District Engineer. Mouth of Columbia River current survey, 1932-1933. Portland, Or. : War Dept., Office of the District Engineer, [1934?]. 2 v. : maps.
- Box 2, Folder 3 United States. Army. Engineer Dept. List of surveys: Columbia River Puget Island to Mouth. Record cards. 1 folder (41 pieces).
- Folder 4 Sand areas and sand analysis curves of Columbia River : composite sand, Mouth of Columbia River. 1932. 1 folder (20 pieces). Includes graphs and handwritten notes.
- Folder 5 Proposed bed-load channel studies at Portland : correspondence and proposal. 1936. 1 folder (5 pieces).
- Folder 6 Salinity and current measurements, mouth of Mississippi River. [1925?]. 1 v. (8 folded charts + 1 p. of notes).
- Folder 7 U.S. Tidal Model Laboratory. Project no. 4, "Newport Bay and Sacramento Sand Transportation Tests". 1934. 1 v., bound.
- Folder 8 Preliminary report, Comparative tests of Sacramento and Newport Bay sands. 1934. 1 folder (6 pieces).
- Folder 9 Correspondence related to South Pacific division projects and the U.S. Tidal Model Laboratory, University of California, Berkeley. 1934-1935. 1 folder (54 pieces).
- Folder 10 Hyde, Charles Gilman. Rapid sand filter design : correspondence, design plan. 1932-1933. 1 folder (2 pieces).
- Folder 11 U.S. Tidal Model Laboratory. Sand test blueprints [to accompany Technical Memorandum 5]. Friction coefficient of dredge drag heads. 1934-1935. 1 folder (40 pieces). Includes 5 mounted photographs.
- Folder 12 Photographs for sand test. 1934. 3 photographs + 3 negatives.
- Folder 13 United States. Army. Corps of Engineers, and U.S. Tidal Model Laboratory Program for continuation of certain experiments : Mouth of the Columbia River Beach Erosion Investigations. 1935-1936. 1 folder (6 pieces). Includes correspondence.
- Folder 14 Beach erosion computation procedure, correspondence, and general notes. 1934-1935. 1 folder (11 pieces).
- Folder 15 Photographs for beach erosion report, June 1935. 1 folder (15 mounted photographs + index).
- Folder 16 O'Brien, M. P. Appendix I: Theory underlying the design of models of estuaries. 1934. 34 leaves. Includes draft copies with O'Brien's handwritten notes.
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- Folder 17 **Beach erosion investigations. Programs. 1933-1935. 1 folder (12 pieces). Partial contents: Partial program for investigations of beach erosion and sand movement at mouth of Columbia River, Sept. 1933 -- Tentative program for beach erosion and model study, Columbia River / M. P. O'Brien and Bruce D. Rindlaub, Oct. 1933 -- Mouth of Columbia River beach erosion investigations, June 12, 1934 : supplement to instructions dated April 16, 1934. Includes correspondence, comments, etc.**
- Folder 18 **Report on mouth of the Columbia River experiments : sand trap experiment, June 19-22, 1934; wind and beach sand movement; storm interrupted observations. 1934. 1 folder (2 pieces).**
- Folder 19 **O'Brien, M. P. Progress report on investigation of beach erosion and sand movement at mouth of Columbia River. 1934. 14 leaves : map.**
- Folder 20 **Tide curves, Columbia River Estuary. 1934. 1 folder (2 graphs).**
- Folder 21 **Brubaker Aerial Surveys (Portland, Or.). Aerial photographs of the mouth of the Columbia River, June 10, 1935. 6 photographs. Includes Cape Disappointment, Sand Island, and Baker Bay.**
- Folder 22 **O'Brien, M. P. Mouth of Columbia River beach erosion investigations : notes on preparation of report of June 15, 1935 (Technical memorandum no. 7). [1934-1935]. 1 notebook, bound.**
- Folder 23 **Beach erosion photographs and model study photographs showing wave action. 1933. 2 folders (ca. 130 mounted photographs + holograph notes).**
- Folder 24 **U.S. Tidal Model Laboratory. Photographs of Columbia River Estuary model. 1934. 1 folder (9 mounted photographs).**
- Folder 25 **Leupold-Volpel & Co. Stevens Recorder for tide model. 1934. 1 folder (10 pieces). Includes correspondence, specifications, illustrations, blueprint, and notes.**
- Folder 26 **United States. War Dept. Office of the Division Engineer. North Pacific Division. Orders and instructions. 1934-1936. 1 folder (13 pieces). Chiefly correspondence from the Division Engineer to M. P. O'Brien. 27 Velocity tabulations, Columbia River Estuary. 1933. 1 folder (4 pieces).**
- Folder 28 **Notebooks. 7 v., bound. Contents: 1. Columbia Estuary model / M.P. O'Brien -- 2. Model basin / M.P. O'Brien -- 3. Santa Barbara tides basin, mouth of Columbia to May 1934 -- 4. Model basin / Bruce D. Rindlaub (includes Columbia River cross sections between Puget Island and Portland, graphs, calculations) -- 5. Mouth of Columbia -- 6. Manuscript of report on design of Columbia Estuary Model, 1934 / M.P. O'Brien -- 7. [Miscellaneous designs] / John A. Jameson, Jr.**
- Folder 29 **Columbia Estuary Model, currents at Astoria program : report, rough draft, notes. 1936. 1 folder (5 pieces).**
- Folder 30 **River flow : discharges for Columbia River and Willamette River : notes, graphs, charts. 1934- 1935. 1 folder (10 pieces).**
- Folder 31 **Current and tide survey, mouth of Columbia River, April 5 to June 25. 1 folder (3 charts).**
- Folder 32 **Beach erosion data. 1935. 2 v., bound. Contents: 1. Computations begun March 1, 1935 2. Current analysis, Harrington Point, computations begun May 27, 1935.**
- Folder 33 **File of materials related to the salinity survey of the Delaware River, October 1935. 1935-1936. 1 folder (27 pieces). Includes notes, correspondence, graphs.**
- Folder 34 **Salinity studies. 1936. 1 notebook, bound.**
- Folder 35 **Tide gages, Fort Stevens, Oregon, Aug. 17 to Nov. 17, 1933. 1933. 1 folder (5 graphs).**
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- Folder 36 **Gage readings, May 28, 1929 : Astoria, Ft. Stevens, and Clatsop Spit. 1929. 1 folder (4 pieces).**
- Folder 37 **Tidal differences between the ends of the jetty and Astoria (Tongue Point) Oregon. 1935. 1 folder (3 pieces).**
- Folder 38 **Beach erosion report : co-tidal lines : mouth of Columbia River. 2 leaves.**
- Folder 39 **Delaware River salinity survey. 1935. 3 folders. Contents: Part I. Final report to the Sanitary Water Board by the Bureau of Engineering on the salinity survey of the Delaware River; Final report of the Engineer in Charge of the Delaware River salinity survey -- Part II. Supplements to the final report of the Engineer in Charge of the Delaware River salinity survey - - Part III. Figures and notes (includes correspondence, blueprints, etc.).**
- Folder 40 **United States. Engineer Office. Portland District. Columbia River, Harrington Point current studies. 1934. 1 v., bound (19 leaves).**
- Folder 41 **Data for mouth of Columbia River (preliminary figures). 1932-1934. 1 folder (4 pieces).**
- Folder 42 **Columbia River data sheets : charts, graphs, etc. 1 folder (13 pieces).**
- Folder 43 **Report on the construction and operation of model of Columbia River Estuary to April 1, 1935. 6 leaves.**
- Folder 44 **U.S. Tidal Model Laboratory. Report on operations : July 1 to August 31, 1935. 1935. 9 leaves + handwritten notes.**
- Folder 45 **U.S. Tidal Model Laboratory. Monthly report on operations : October 1935; November 1935; January 1936 (2 pts. in 3 v.); February 1936; May 1936. 7 folders.**
- Folder 46 **U.S. Tidal Model Laboratory. Report on the operation of a model of the Columbia River Estuary, April 1 to July 1, 1935 : [quarterly report]. 6 leaves.**
- Folder 47 **U.S. Tidal Model Laboratory. Quarterly report on operations and results : July 1 to September 30, 1935; October 1 to December 31, 1935; January 1 to March 31, 1936; April 1 to June 30, 1936. 4 folders.**
- Box 3, Folder 48 **Photographs of the Columbia Estuary model : currents at Astoria. 1936. 1 folder (35 prints, 21 leaves of mounted photographs).**
- Folder 49 **Mouth of the Columbia River (MCR) beach erosion. Experiment 2, Scour and fill. 1 folder (13 leaves). Includes: Yearly rate of recession of 10 ft. and 50 ft. contours from profiles, 1851-1933 -- Areas of cross sections, 1876-1905 and 1905-1930.**
- Folder 50 **Sharpley, B. F. Mouth of the Columbia River (MCR) beach erosion. Experiment 2, Series of cross sections along beach. 1 folder (26 pieces).**
- Folder 51 **Sharpley, B. F. Mouth of the Columbia River (MCR) beach erosion. Experiment 2-a, Contours of scour and fill : Clatsop Beach. 1934. 1 folder (79 pieces).**
- Folder 52 **Sharpley, B.F. Mouth of the Columbia River (MCR) beach erosion. Experiment 2-a, Clatsop Beach erosion. 1931-1934. 1 folder (17 blueprints).**
- Folder 53 **Sharpley, B. F. Mouth of the Columbia River (MCR) beach erosion. Experiment 2-b, Computer data. 1 folder (14 pieces).**
- Folder 54 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-a, Tabulation of inshore current measurements. 1933-1935. 1 folder (67 pieces).**
- Folder 55 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-a, Inshore currents. 1934. 1 folder (35 pieces).**
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- Folder 56 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Current segregations; float observations. 1925-1933. 1 folder (26 pieces).**
- Folder 57 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Wind computation data- wind currents; float observations, predominant wind. 1918-1934. 1 folder (27 pieces).**
- Folder 58 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Float data south of South Jetty, March 7-13, 1934. 1 folder (24 leaves).**
- Folder 59 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Duplicate float data. 1933. 1 folder (15 pieces + 1 mounted photograph).**
- Folder 60 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Time corrections. 1934. 1 folder (9 pieces). Includes correspondence, currents and additional data from R. E. Hickson, U.S. Engineer Office, Portland.**
- Folder 61 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Float observations; basis of segregation of float data at MCR. 1935. 1 folder (12 leaves).**
- Folder 62 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Photographs of North Jetty and South Jetty, Sand Island. 1933. 1 folder (48 mounted photographs). Some photos by Brubaker Aerial Surveys, Portland.**
- Folder 63 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Float data. 1925-1932. 1 folder (40 pieces).**
- Folder 64 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Float data. 1932. 1 folder (11 pieces).**
- Folder 65 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Current survey notes. July 1934. 1 folder (9 leaves).**
- Folder 66 **Mouth of the Columbia River (MCR) beach erosion. Experiment 3-b, Non-tidal currents at Light Vessel. 1 folder (3 pieces).**
- Folder 67 **Yaquina Bay current survey : worksheets. 1 folder (12 pieces).**
- Folder 68 **Yaquina Bay current survey data. August 1934. 1 folder (8 pieces). Includes correspondence.**
- Folder 69 **Float data : Columbia River at Harrington Point. June 1921; November 1933. 1 folder (17 pieces).**
- Folder 70 **Harrington Pt. Yaquina Bay, mouth of Columbia River beach erosion current analysis : tabulated data : "Book no. 7". 1 notebook, bound.**
- Folder 71 **Mouth of the Columbia River (MCR) beach erosion. Experiment 5, Transportation of beach material. 1933-1934. 1 folder (5 pieces).**
- Folder 72 **Mouth of the Columbia River (MCR) beach erosion. Experiment 7, Wind driven sand (south beach). 1933-1935. 1 folder (6 pieces). Includes charts, graphs, blueprints, correspondence, etc.**
- Folder 73 **Mouth of the Columbia River (MCR) beach erosion : progress report on Experiment 7, movement of sand by wind. June 27, 1934. 33 leaves.**
- Folder 74 **Mouth of the Columbia River (MCR) beach erosion : weather observations, 8/23/33 to 10/16/34 : Hawkins' weather observations. 1935. 2 leaves.**
- Folder 75 **O'Brien, M. P. Mouth of the Columbia River (MCR) beach erosion : wind drift. 1934. 1 folder (16 pieces). Includes wind gradient, general data, critical wind velocity to move sand.**
- Folder 76 **Mouth of the Columbia River (MCR) beach erosion : wind drift. 1933-1934. 1 folder (53 pieces).**
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- Folder 77 **Mouth of the Columbia River (MCR) beach erosion : tracings and negatives. 1934. 1 folder (21 pieces).**
- Folder 78 **O'Brien, M. P. Mouth of the Columbia River beach erosion investigations : progress report on Experiment 7, movement of sand by wind. June 27, 1934. 27 leaves + 1 folder (6 pieces).**
- Folder 79 **Wind and tractive force computations : notebook for beach erosion technical memorandum no. 7, wind drift. 1933-1935. 1 notebook, bound + 1 photograph.**
- Folder 80 **Mouth of the Columbia River (MCR) beach erosion. Experiment 8, Wind : charts of relationship between wind records at North Head and Columbia River Lightship. 1935. 1 folder (20 pieces).**
- Folder 81 **Mouth of the Columbia River (MCR) beach erosion. Experiment 8, Wind : wind summaries, North Head, Washington. 1934. 1 folder (4 pieces).**
- Folder 82 **Mouth of the Columbia River (MCR) beach erosion. Experiment 8, Wind : comparison of wind at North Head, Clatsop Beach, and Light Vessel #88. 1933-1934. 1 folder (3 pieces (ca. 40 leaves)).**
- Folder 83 **Wave and wind analysis computation (observed at Columbia River Lightship). 1933-1936. 1 notebook, bound.**
- Folder 84 **Mouth of the Columbia River (MCR) beach erosion. Experiment 9, Offshore currents during freshets : silt-laden water (computer's report). 1933-1935. 1 folder (18 pieces).**
- Folder 85 **Mouth of the Columbia River (MCR) beach erosion. Experiment 12, Aerial survey data (computer's report). 1933-1935. 1 folder (6 pieces).**
- Folder 86 **Mouth of the Columbia River (MCR) beach erosion. Experiment 13, Bed-load of Columbia River. 1934-1935. 1 folder (10 pieces).**
- Folder 87 **Mouth of the Columbia River (MCR) beach erosion. Experiment 13, Bed-load of Columbia River : bed-load data, June 21-22, 1934. 1 folder (17 pieces). Includes correspondence, blueprints, graphs.**
- Folder 88 **O'Brien, M. P., and Bruce D. Rindlaub. Mouth of the Columbia River (MCR) beach erosion. Experiment 13, Bed-load of Columbia River. Appendix II. The transportation of bed-load by streams. 1934. 13 leaves. Revision of a paper presented at the Berkeley Meeting, American Geophysical Union, June 1934.**
- Folder 89 **Mouth of the Columbia River (MCR) beach erosion. Experiment 13, Bed-load of Columbia River : program for bed-load tests for First Portland District. 1935-1936. 1 folder (11 pieces). Includes correspondence.**
- Folder 90 **U.S. Tidal Model Laboratory. Project no. 4 : comparative tests on transportation of Newport Bay and Sacramento River sands in pipelines. 1934. 1 v., bound.**
- Folder 91 **U.S. Tidal Model Laboratory. Project no. 5 : transportation of sands in pipelines. 1935. 1 v., bound.**
- Folder 92 **Photographs of the Columbia River Estuary model. 2 negatives.**